MARCH | 1957

products finishing

FINISHES ON METAL PRODUCTS

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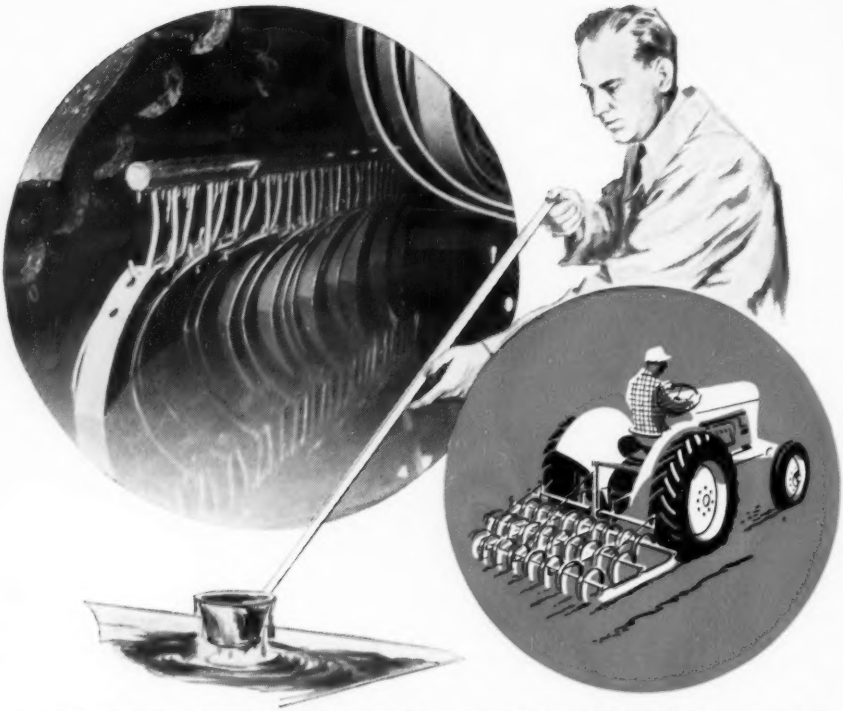

A REGULAR DIP IN YOUR TANK makes sure your finish performs . . . *at both ends of the line!*

Keeping a watchful eye on your finish, even after it is delivered, is one of the ways Sherwin-Williams safeguards trouble-free performance of your finish . . . on the production line *and* on your product in use.

For instance, on dip tank operations ranging from 1,500 gallons to 5,000 gallons and more, Sherwin-Williams Technical Servicemen regularly take samples to be sent to the laboratory for stability checks. Viscosity, specific gravity, drying time, skinning, settling, film gloss and shade among other things, are checked against original formulation.

You get a report with any necessary adjustments recommended. This assures smooth production line operation as well as customer satisfaction . . . *both* ends of the line are covered.

Whether you make appliances, furniture, or metal or wood products of any kind, make sure at both ends of *your* line. For facts, call your nearest Representative, or write: The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio. In Canada: 2875 Centre Street, Montreal.

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1	15	29	43	57	71	85	99	113	127	301	2nd Cover	337	351	365	379	393	407	421
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4	18	32	46	60	74	88	102	116	130	304	315	326	340	354	368	382	396	410	424
5	19	33	47	61	75	89	103	117	131	305	316	327	341	355	369	383	397	411	425
6	20	34	48	62	76	90	104	118	132	306	317	328	342	356	370	384	398	412	426
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8	22	36	50	64	78	92	106	120	134	308	319	330	344	358	372	386	400	414	428
9	23	37	51	65	79	93	107	121	135	309	320	331	345	359	373	387	401	415	429
10	24	38	52	66	80	94	108	122	136	310	321	332	346	360	374	388	402	416	430
11	25	39	53	67	81	95	109	123	137	311	322	333	347	361	375	389	403	417	431
12	26	40	54	68	82	96	110	124	138	312	323	334	348	362	376	390	404	418	432
13	27	41	55	69	83	97	111	125	139	313	324	335	349	363	377	391	405	419	433
14	28	42	56	70	84	98	112	126	140	314	325	336	350	364	378	392	406	420	434

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4	18	32	46	60	74	88	102	116	130	304	315	326	340	354	368	382	396	410	424
5	19	33	47	61	75	89	103	117	131	305	316	327	341	355	369	383	397	411	425
6	20	34	48	62	76	90	104	118	132	306	317	328	342	356	370	384	398	412	426
7	21	35	49	63	77	91	105	119	133	307	318	329	343	357	371	385	399	413	427
8	22	36	50	64	78	92	106	120	134	308	319	330	344	358	372	386	400	414	428
9	23	37	51	65	79	93	107	121	135	309	320	331	345	359	373	387	401	415	429
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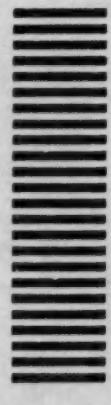


HAVE YOU TRIED THIS EXTRAORDINARY CLEANER?

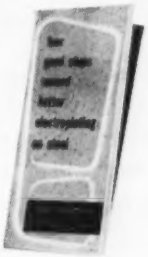
Oakite Rustripper removes rust and heat scale in the same operation that removes oil. It avoids hydrogen embrittlement, damage to machined surfaces and other disadvantages of acid pickling.

Have you taken the four good steps?

How can cleaning costs be reduced 33% while cleaning quality is being improved? *See pages 7 and 8 of booklet.*

What are four easy ways to improve the average rinse tank? *See page 10.*

What causes hydrogen embrittlement during electrocleaning? What is the remedy? *See pages 15 and 16.*



Do you need a brass cleaner that gives better protection against tarnishing?

Oakite has a new brass cleaner that provides scientific protection against the oxygen that tarnishes brass and other copper alloys during the application of reverse current.

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- ☐ Four good steps toward better electroplating on steel
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OAKITE

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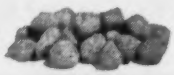
Unequalled barrel finishing ...with 4 different TUMBLEX* abrasives

The long experience of Norton engineers has brought the value-adding, cost-cutting "Touch of Gold" to barrel finishing. To you, this means prompt aid in solving finishing problems. Just send sample parts, ranging from tiny needles to hefty forgings, to the Norton Sample Processing Department. You'll get helpful recommendations as to the type and size of Tumblex material to use plus other data on the equipment and methods you need most. **Write to Norton Company, Worcester 6, Mass.** for a copy of the newly revised handbook on barrel finishing. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. Behr-Manning Company, Troy, N. Y., division of Norton Company. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

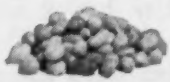
G-324

ALUNDUM* Tumblex "S". Newly developed bonded spheres that easily get into areas where other abrasive shapes can't reach. Exceptionally dense and long lasting, for top barrel finishing in many applications. In five different sizes.

ALUNDUM Tumblex "T". Bonded, triangular shape, and fast cutting for special shaped parts. Triangular form prevents wedging in work slots or holes. Available in four sizes.



ALUNDUM Tumblex "A". The workhorse for general barrel finishing. Performs several operations at once, removing flash, scale, tool marks and burrs, while forming radii and finishes to required microinch. Made in eleven sizes.



Tumblex "N". Natural stones, offered exclusively by Norton, for high lustre, especially on die castings and soft metal. Rounded uniform shape brings out the most desirable color of finished parts. In seven sizes.

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From H-VW-M come better methods

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Cadmium Plating Costs Cut With **CADALUME.**
This new H-VW-M formula:—

- Eliminates most bright dipping
- Increases brightness range 10%
- Improves distribution in all tanks
- Speeds plating time by 10%

CADALUME simplifies the cadmium plating process—makes it profitable for job shops and plating plants.

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LOWER COSTS	**10% FASTER: 10% BRIGHTER**
BETTER DISTRIBUTION	**CADALUME STAYS STABLE**

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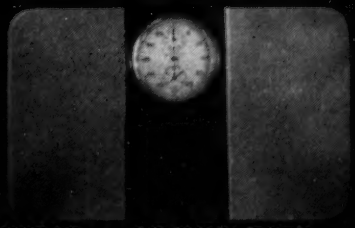
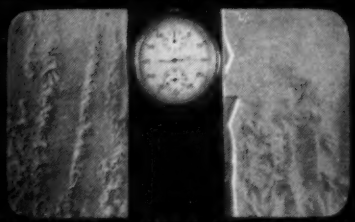
STRIPPING ENAMEL . . .

SAVING TIME

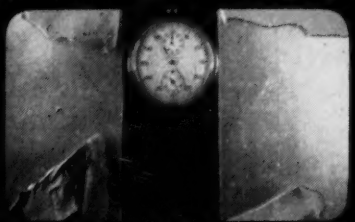
Enthonics AT WORK



IMMERSED . . . THE WATCH STARTS!



15 SECONDS . . . WRINKLING TAKES PLACE!



25 SECONDS . . . STRIPPING COMPLETED!

25 seconds from immersion to completed stripping!

That's the fast, dramatic story of ENTHONE Enamel Stripper S-18 in action — another example of *Enthonics* at work.

Enthone Enamel Stripper S-18 is the modern organic stripper developed for removing the newest organic finishes such as Epon or Epoxy coatings and many synthetic enamels from copper, copper alloys, steel and aluminum.

For the right strippers to solve your organic stripping problems fill out a questionnaire we'll send at your request; return it with typical samples of your work. Enthonics will find the answer . . . without obligation!

And ask for your copy of the "Enthone Check List" of literature covering more than 60 products and processes developed for modern electroplating and metal finishing.

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Representatives and Stock Points

Binghamton, N.Y.-Chicago-Cleveland-Dallas-Los Angeles

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products finishing

Vol. 21 No. 6 March, 1957

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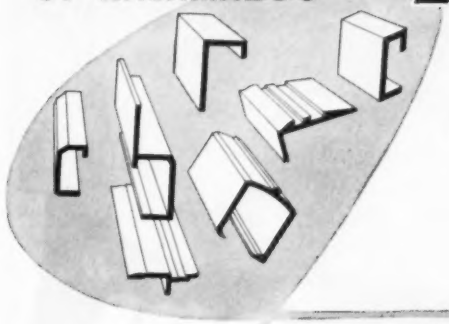
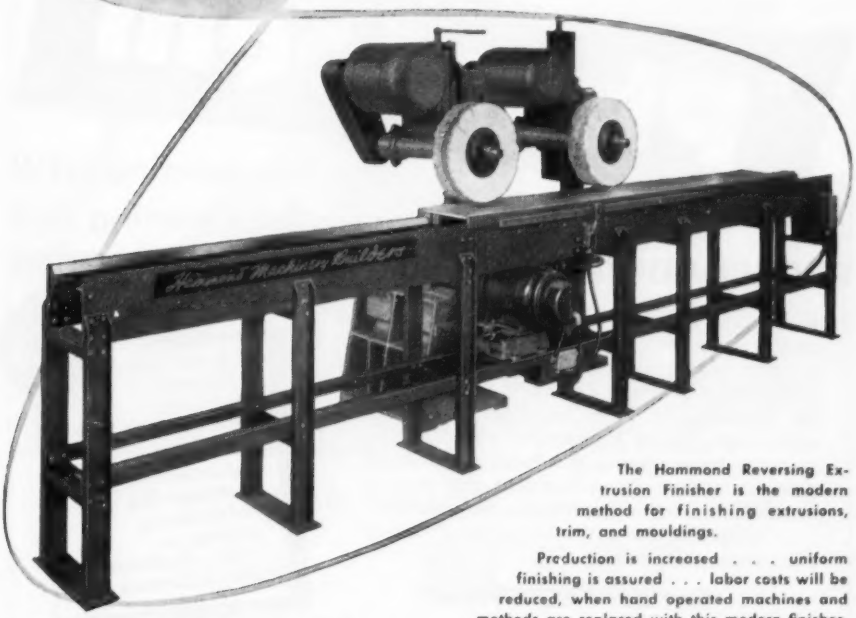
for LOW COST, VOLUME PRODUCTION FINISHING OF EXTRUSIONS, TRIM AND MOULDINGS





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- Gives highest degree of etch—better bonding.

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BETTER HANDLING — No mixing of parts. Becomes a part of a straight line production system.

NO HEALTH HAZARD — Occupational health hazards eliminated with ventilation of equipment.

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FITS ANY PLANT LOCATION — Does not need special buildings—Can be moved at any time. Low head room.

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LOW INITIAL COSTS — For average operation lowest initial machine costs.

LOW MAINTENANCE COSTS — Proven over years of use and in varied operations.

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YOUR METAL FINISHING SUPERMARKET
DETROIT 16, MICHIGAN

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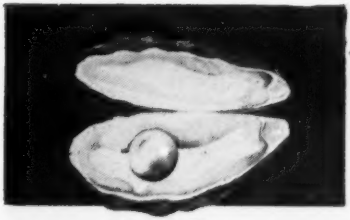

How to add the beauty of PEARL to your finish with NACROMER®

It's easy! Simply by adding a small amount of Nacromer to your regular coating material*, you add a beautiful pearl-like lustre to your finish. The range of effects that can be achieved by also adding transparent pigments or dyes is amazing. For example, it is being used to get beautiful gun metal, gold and silver finishes. It transforms the character of standard colors to achieve unique effects. Nacromer will make a finish that will enhance the beauty of your product . . . increase its sales-appeal!

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If eye-appeal plays an important role in the sale of your product, you can benefit from the distinctive, different kind of pearl-like finish Nacromer gives. A demonstration sample will show you the difference Nacromer makes on the same kind of material you use – just mail the coupon to get your sample.

**Nacromer is not suitable for use in pigmented enamels, high temperature bake-type synthetic resins containing formaldehyde, or paints. It is suitable for use over these coatings in a clear enamel or lacquer.*

the **Mearl** corporation

"World's Largest Producers of Pearl Essence"

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☐ wood ☐ metal ☐ plastic ☐ other

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Company.....

Address.....

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for crucial

metal cleaning
and **treating**

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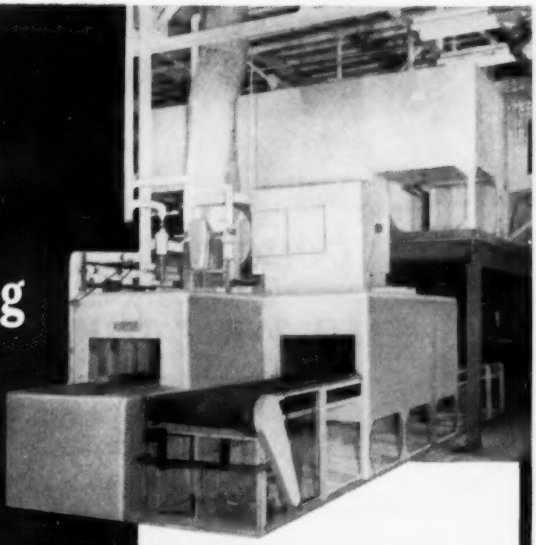
Cincinnati



Compact side-by-side design of belt conveyor type Wash, Rinse & Hot Air Blow-Off Machine saves 40 sq. ft., permits inclusion of 12′ of cooling, and makes 1-man operation possible, since load and unload are at same end. Note how phosphatizing machine is mounted above for 7′6″ headroom, with its blow-off section overhung to save platform cost.

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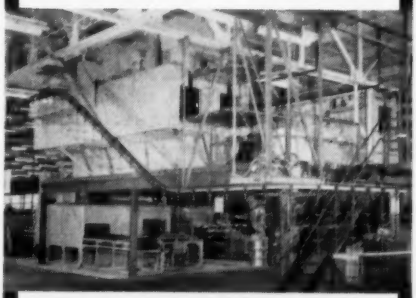

"U" shaped Five-Stage Phosphatizing Unit plus oven actually forms "S" shape, clears area below.

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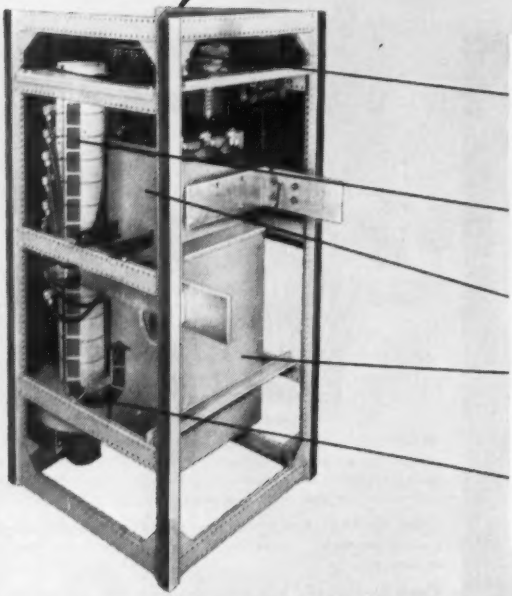

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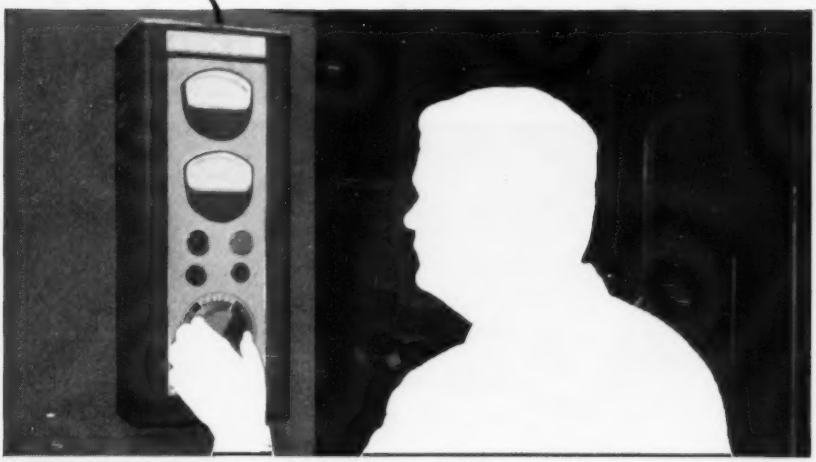

RELEASE THIS MAN FOR MORE PRODUCTIVE WORK . . . no further need for him to continually correct output in order to get high-quality work. Just set it and forget it. This unit corrects faster, more accurately than the most skilled operator. You get uniform power for most profitable plating.

NEW line of low-priced automatic germanium plating rectifiers

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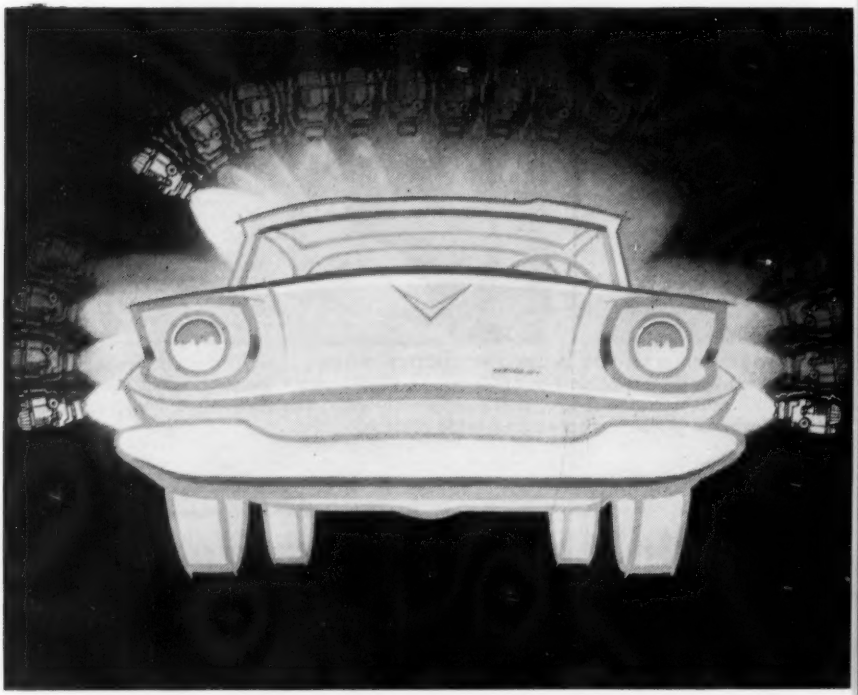
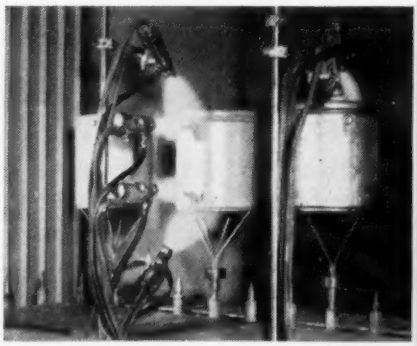
Mechanized painting



DeVilbiss Automatic Contour Spray Machines are a vital part of the finishing lines in the world's most modern plants, turning out gleaming finishes in a variety of colors at low cost.



Simultaneous painting of exterior and interior of these 5-gal. pails is typical of the versatility and efficiency of DeVilbiss automatics.

eliminates human errors

DeVilbiss automatic spray machines consistently turn out paint jobs to perfection . . . on products of practically any size and shape. Split-second timing and accurate gun positioning cuts paint waste to a minimum, and ensures absolute uniformity of finish on every part. And these results are attained with high-volume production at remarkably low cost!

For example, the DeVilbiss Automatic Contour Spray principle, represented at left, is an adaptation of one of DeVilbiss' many standardized automatic spray machines – and is built to specific requirements so that flawless finishes are ensured with the highest possible efficiency.

Whether your production is large or small, an automated finishing operation like this, with a special or standard machine, would more than likely benefit your business. Without obligation, we will test run your product in our Customer Lab . . . submit a report of actual costs, plus projected savings over your present system. Ask our nearby representative to make the arrangements for you now.

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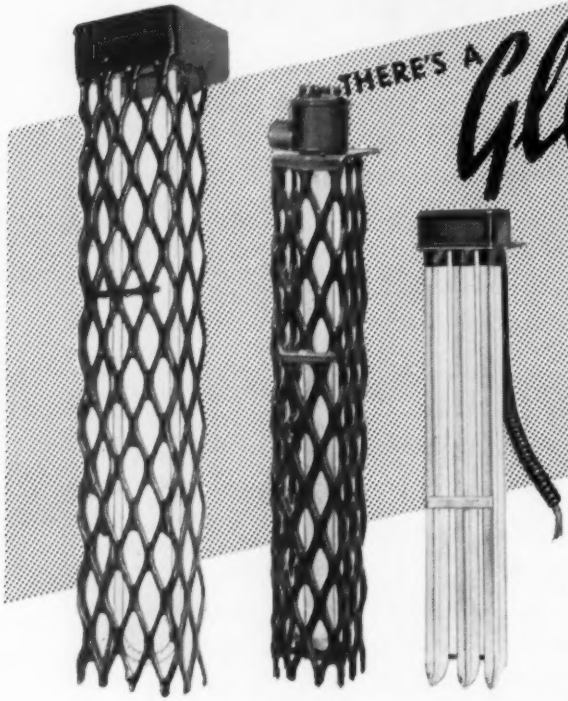

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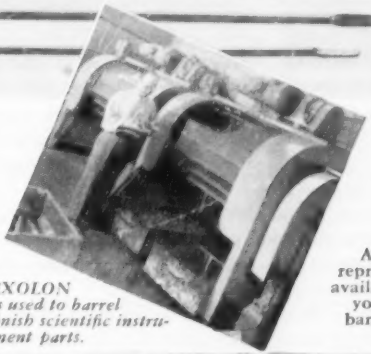
Savings over old Hand Finishing Methods—50 to 80 Percent

Today, scientific research has developed equipment and abrasives for better barrel finishing. Such an abrasive is EXOLON, an electrically fused aluminum oxide, resistant to fracture and extremely hard. EXOLON is pretumbled to produce rugged shapes that stand up longer in operation. Results are always the same — batch after batch when operated in formulated finishing cycles.

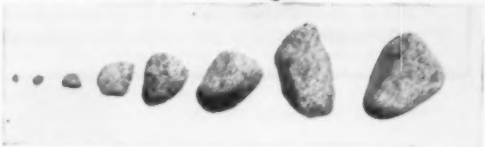
Precision parts shown above were barrel finished with EXOLON to a predetermined stock removal and surface finish. Whether castings, stampings or machined parts, there is an EXOLON abrasive to meet your finishing needs.

Write for folder and recommendations!



EXOLON is used to barrel finish scientific instrument parts.

An EXOLON representative is available to help you with your barrel finishing problems.



EXOLON Tumbling Abrasive is carefully graded in sizes from 2½ inches down to fine powders.

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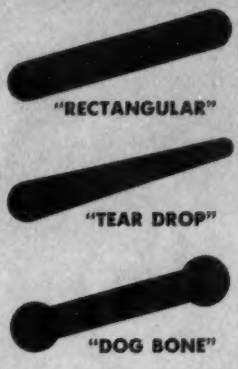
NEW SHAPED, EXTRUDED APW SILVER ANODES



STANDARD SHAPES

CONTROLLED GRAIN SIZE: APW EXTRUSION PROCESS* controls grain size within definite limits — minimizes sheddings

These scientifically shaped anodes retain 80% of original active surface area after 85% by weight has been plated off!

Costs are lowered by prolonged anode life, minimized polarization and less silver scrap to be refined.

In addition, the APW Extrusion Process controls grain size within definite ideal limits so that corrosion is smooth and uniform. Electrodeposits are *consistently* smooth. Shedding is virtually eliminated. Rejects are a comparative rarity!

We are anxious that the silver you buy in anodes is used most efficiently and economically. Special anode shapes will be engineered to meet your particular plating bath conditions. Call or write for a representative. We'll be glad to assist with your plating problems.

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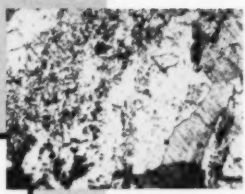

ROLLED FLAT PLATE ANODE SECTION:
This Photomicrograph shows highly irregular, uncontrolled grain size—a major cause of shedding and resultant rough electrodeposits.

APW EXTRUDED ANODE SECTION:
Small fully controlled regularity of grain size promotes uniform corrosion, smoothest electrodeposits, less rejects.

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. . . and the Gasway coater paid for itself in five months' time

Problem: Colony Furniture Company was building a new line and had to have the lowest possible cost in finishing operations. Tops, ends, fronts, backs, aprons, drawer fronts, in fact every component part had to be finished smoothly, richly, yet economically. All this without too high an initial expenditure for equipment.

Solution: A Gasway Model 32B Rollacoater was installed to operate in a production line consisting of the coater, drying ovens, and a printer for wood graining the parts. The coater was used to apply both prime and finish coats of lacquer.

Results: According to Superintendent, Walter J. Soltys, the number of rejects is running an average of 2 out of 700 Pieces or about 0.28%. Mr. Aaron Newman, Plant Manager, estimates that in approximately a five month period the savings inherent in this finishing operation equalled the cost of the rollercoating installation. Newman also reports that the finish obtained is more uniform and smoother than alternative methods. As a result of Colony's successful experience with rollercoating in the Linden plant, the company has converted to the same method in its original plant at Little Rock, Arkansas.

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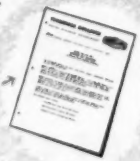
All this in one quick trip through your washer
WITHOUT OBJECTIONABLE FOAMING



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editorial . . . . .

Progress in Paint Finishing Methods

Progress in paint finishing takes place in two ways. One is by the development of new or improved types of film-forming materials in the research and development laboratories of the paint manufacturer. The other is by the improvement of machinery and equipment for application of paint, by the equipment manufacturers. Tremendous strides have been made in improving the spray method of paint application since its invention 82 years ago. Likewise, progress has been made by introducing other methods for applying paint.

The series of articles entitled "A Survey of Paint Application Methods," beginning on page 36 of this issue, will review methods of paint application and describe helpful techniques developed to make these methods more efficient.

Commonly used methods of industrial paint finishing that will be discussed in these articles can be summarized as follows: hand spray painting, automatic spray painting, electrostatic spraying, dipping (manual or conveyorized), flow coating, roller coating, tumble painting, centrifugal dipping and finishing, hot paint spraying, airless spray painting, steam spraying, silk screen decorating. All of these methods came into being to help solve finishing problems, create new finishes, and/or achieve new economy and efficiency in paint finish application. To use these new methods and processes, different paint formulations often must be developed. Thus, the equipment manufacturers work with the finish formulators in helping the industry to make progress.

Sometimes, in applying new finishing techniques advantages other than those first considered are found. The hot spray method, for example, was originally developed to save solvents, and apply a heavier coat of finishing material with each spray gun stroke. Now it has been found that there are advantages in hot spraying formulations with the normal amount of solvent included—important advantages such as improved quality and appearance and reduced rejects. Similar examples can be cited for some of the other methods.

Finding new and better ways to do things is traditional in American industry. When there are so many different, yet efficient and effective ways to apply paint finishes now, it is difficult to imagine just what developments will come along tomorrow, next week, next year, and beyond that.

The sure thing is that these new methods will come into being. And they will make possible better finishes, applied more economically.

Ezra A. Blount

—EDITOR

Modern Brass Plating

Proper formulation and control aid in securing desired results from conventional brass and bronze plating solutions . . . how to prevent and correct commonly encountered difficulties . . .

By HENRY STROW
True Brite Chemical Products Co.

ESSENTIALLY ALL BRASS plating solutions are cyanide solutions. In most other solutions there is a choice of types, but with the alloy plate of copper and zinc the conditions of successful plating are so narrow that cyanide complexes furnish the only presently successful solutions.

One reason brass has been such a successful alloy plate is that it has a combination of desirable properties. The color of brass deserves special mention. Starting with the red-pink of pure copper, there is a gradual transition through shades of bronze color until at about 80 per cent copper and 20 per cent zinc, a yellow alloy is produced. These alloys continue to be yellow up to about 65-35, when a bronze tint with a pink cast is sometimes obtained. This occurs at the transition of the alpha to beta brass and is a comparatively unstable color. The yellow brass changes only slightly over the range of 80-20 to 70-30, and it is this yellow color that is the most widely used. The range from 85-15 to 90-10 covers light bronze. The 85-15 alloy is also known as "richlow brass" and sometimes as "architectural bronze."

The early brass plating solutions were solutions of copper and zinc cyanide in a slight excess of sodium cyanide with a small amount of ammonia added. They were used at room temperature and the primary idea was to secure a color. Even today thickness specifications for brass plating are seldom used. Even when used there is seldom any reason for doing so, other than to secure something more than a flash. Because of the lack of control and the lack of knowledge of proper conditions of operation, the current density possible with these solutions was less than 5 a.s.f.; a uniform appearance over a wide range of current densities was unusual.

Over a period of many years much has been written about brass plating. When we consider that

brass was plated over 60 years ago the amount of work on it is hardly surprising.

Today, using conventional brass plating solutions, it is possible to secure highly successful results. These solutions can match most of the special formulas in speed, can be controlled to produce uniform plate over a wide range of current densities with high efficiencies, and can be varied to produce almost any color of brass.

A conventional brass solution can be operated to produce a heavy plate at average current densities of about 20 a.s.f. The brass solution, when checked by Hull Cell and other uniform current density tests, has a top potential of 35 to 40 a.s.f.; by minor modification of the solution it can be run even higher. The higher-speed solutions require much more careful control than low-speed solutions.

High brightness can be obtained from a properly controlled brass solution. Starting with a bright surface, the brightness will continue to be good up to a thickness of 0.0001 inch or even more. Even a much heavier plate will have only a slightly smoky color. On dull surfaces the brass plate will be dull. In general, solutions with a low efficiency are the brightest.

Solutions and Operating Conditions

A common formula for brass plating is as follows:

Copper cyanide	4.3 oz./gal.
Zinc cyanide	1.7 oz./gal.
Sodium cyanide	6.0 oz./gal.
Sodium carbonate	2 oz./gal.
Sodium bicarbonate	2 oz./gal.
Ammonia (26% approx.)	1 pint/100 gal.

Analysis of this solution is as follows:

Copper	3.0 oz./gal.
Zinc	0.95 oz./gal.
"Total" sodium cyanide	3.0 oz./gal.
pH	10.0

The analysis of the solution should be considered at this time, especially since an explanation of "total" sodium cyanide is needed. Since the most convenient method of analysis of cyanide is by the use of silver nitrate, it should be noted that the stability of the silver cyanide complex lies between the stability of the zinc and copper cyanide complexes. Accordingly, silver salts will take cyanide away from

"I really hate to say anything to him —he's one of our very best men."

"The formula given is an excellent one, and may be used for both still tanks and barrels."

zinc cyanide complexes but not from copper. By various empirical methods in the past, so-called free cyanide has been determined in brass solutions. The answer was so dependent on exact dilutions, pH of the solution and amount of materials that it could not be duplicated. Accordingly, none of the suggested methods for analyzing "free" sodium cyanide in brass solutions is recommended.

Instead, the preferred method is to add a small amount of caustic to the sample, and titrate all the cyanide combined with the zinc plus any so called "free" cyanide. This method is accurate and reproducible. The same method is used for the determination of total sodium cyanide in zinc plating solutions; hence the name "total" sodium cyanide.

The formula given is an excellent one and may be used for both still tanks and barrels. The amounts of copper, zinc and sodium cyanide may be varied over wide limits, so long as the ratio of one to the other is kept constant. Thus for still tank work a slightly weaker solution (about 2.5 oz./gal. of copper) would be recommended, and for high-speed barrel plating the amount of copper present should be about 3.5 to 4.0 oz./gal. Other ingredients would be in proportion.

The influence of changes in composition may be summarized as follows: the important ratio is the ratio of zinc to sodium cyanide. For efficient operation it should be kept at about 3 to 1 (very low free cyanide). For various reasons of anode solubility and solubility of the zinc, this is hard to maintain and the ratio is usually nearer 4 to 1. Good results are obtained over a general ratio of 3 to 1 up to 5 to 1. Whenever the ratio is over 5 to 1, the low-current-density areas are red and will even stop plating. High current density ranges are generally improved in appearance with high cyanide, and the upper current density range is wider. Raising the cyanide content will turn the plate redder, and decrease the amount of zinc plated.

The ratio of copper to zinc is not too important and only very slight color changes will occur with large changes in ratio of zinc to copper. For general stability reasons the copper to zinc ratio is maintained so that the copper and "total" sodium cyanide are about the same. This gives a sufficiently high zinc content so that zinc is not depleted in ordinary operation for eight hours or more, and uniform color can be obtained.

The pH is an important condition of operation. Normally it is self regulated. At the optimum range of about 9.6 to 10.2, carbonate is a strong buffer and even large additions of acids or alkalies do not produce definite changes. Brass solutions operate best within the above ranges but many of them are operating at pH values as low as 9.2

"Where the brightest plate is desired, small additions of ammonia will help maintain a bright plate."

with good results. It is difficult to secure good solubility of zinc at the low values. If the pH is higher than the above ranges, off-colors appear, starting in the low current density areas. At pH values of about 11.5 to 12.5 there will be produced at low current densities some brown, orange, purple and other strange bands. The optimum pH does depend somewhat on temperature. Low-temperature solutions operate best at low pH.

The ammonia content of a brass solution is important. Normal operation produces enough ammonia by cyanide decomposition to maintain it. Additions must be made only after prolonged shutdowns. High temperatures (over 95 deg. F.) usually drive off the ammonia faster than it is formed, and frequent additions are necessary to maintain yellow color. Ammonia acts as a brightener in the brass solution. Where the brighest plate is desired, small additions of ammonia will help maintain a bright plate.

The action of ammonia in the solution is to increase the zinc content of the plate. A solution that has lost all of its ammonia will plate high in copper, usually with bands in the general range of 5 to 15 a.s.f. If ammonia is too high in a solution, it may be driven off by heating the solution to 110 to 120 deg. F. for a short time. Actually, while the ammonia is high, the solution may be used at these high temperatures and will produce a good plate.

Temperature should be controlled in brass plating. The recommended range is from 80 to 95 deg. F. The lower temperature is used for flash plating and other light plates. The higher temperature is used for heavier plates. The higher the temperatures, the better the plating efficiency and the more plate secured for the same amount of current. At 95 deg. F. and 15 a.s.f., the solution recommended has a plating efficiency of about 75 per cent. The same solution at 70 deg. F. has an efficiency of about 50 per cent. The higher temperatures give slightly more copper in the deposit. To secure a so-called green brass, which is actually about a 68-32 alloy, a solution temperature of about 70 deg. F. may be used. Agitation is not too often used in brass solutions. It is helpful for heavy plating, however, and increases the efficiency.

Impurities are a much-neglected phase of brass plating. One impurity that is always present and serves a useful function is carbonate. This furnishes buffering for the solutions. In a properly operated solution it does not build up rapidly, and drag-out will limit it to a value of about 12 to 16 oz./gal. Carbonates do no apparent harm, even in a saturated solution.

Carbonate may be removed by chilling the solution to about 20 to 25 deg. F., and filtering to remove precipitated carbonate. This also removes some of the zinc, and the solution concentration must then be

corrected. It is also possible to use lime to remove carbonate. The caustic generated is buffered by the carbonate left. Only small amounts of carbonate may be removed by a single treatment.

Of the other possible impurities most are harmless. Lead can cause red deposits in low-current-density areas, as can tin. Most wetting agents are insoluble in the brass solution, as are most soaps, so that they simply form scum on the solution. Certain organic impurities can cause a cloudy plate. Arsenic is sometimes used as a brightener, but it plates out quite fast and causes a whitening of the plate. It has little effect on a solution that is in good condition.

"Hey boss, you guys better get that conveyor running again by noon—my head aches!"

The above discussion has been primarily concerned with plating of yellow brass. Plating of so-called "richlow brass" or bronze to match colors is being done with considerable success in both still tanks and barrels.

A general solution formula is:

"Total" sodium cyanide	4.0 to 6.0 oz./gal.
Copper (as metal)	½ to ¾ of above
Zinc (as metal)	¼ to 1/6 of cyanide
pH	10.0 to 11.0

The solution starts with the general formula given. The higher copper ratio is used for darker colors; the addition of sodium cyanide to the solution produces a redder plate.

The solution is usually operated at 90 to 130 deg. F. Lower temperatures produce lighter colors and higher temperatures, darker colors. If a darker color is needed with low temperature, the cyanide and copper ratios can be changed to produce it. Careful operation is necessary to secure uniform results.

In yellow brass plating a difference of 3 or 4 per cent in copper content makes no difference in color. With the higher copper alloys the alloy must be controlled within about 1 per cent of correct copper content. Small additions of sodium cyanide will control the color, with other additions of all ingredients made daily in correct ratio. Ammonia is seldom used in these solutions. It may be used in

"A current capacity of about one ampere per gallon should be available."

small amounts (especially at the higher temperatures) if the color is too dark and an immediate yellow color is desired.

The bronze colors are not as bright as yellow brass. Plating must be followed by burnishing, buffing, or some other brightening treatment. Bronze colors will be bright, though, over bright nickel.

The anodes used should, in general, be the same as the plate desired. While 80-20 anodes are often specified, this is due more to habit than anything else. Anodes of 70-30 or 75-25 composition are recommended for yellow brass. A composition of 85-15 is usually recommended for "richlow" brass or bronze plate.

The brass solution does not dissolve the brass anodes well, and a considerable portion of the metal comes from the salts added. Actually, a brass solution in proper condition may have anodes which look sludgy. So long as current is passing and no insulating film is forming, the anodes are in good condition. If the anodes do form a film that does not pass current, the solution should be checked for low pH and low cyanide. If these are satisfactory, more anodes should be put in the tank. A gray, brown, or dark film is common.

Conventional barrel plating equipment can be used. Either 6 or 12 volts may be used. Twelve volts naturally gives more current and a heavier plate in a given length of time. About 250 to 300 amperes can be drawn at 12 volts. A voltage of 3 to 5 should be available for still tank plating. A current capacity of about one ampere per gallon should be available.

Applications for Brass Plating

One of the most common uses for brass plating is as a finish for steel or zinc die castings. The steel or zinc is simply plated with brass and then burnished, brushed or buffed to the desired finish. No undercoat is necessary or desirable.

To secure a bright finish without buffing, a bright plate of another metal is applied first, followed by a thin brass flash. This produces a bright finish. Wire goods, cheap

"It literally eats off all the old finish on rejected parts that have to be re-done."

handbag frames and similar goods are finished in this manner. Bright nickel or bright bronze is used as the base plate.

Aluminum may be plated with brass after a zincate treatment. No copper flash is necessary. Building hardware is being plated in this manner.

Brass Plating Problems

A trouble frequently encountered with brass plating is "spotting out." True "spotting out" should not be confused with staining. "Spotting out" may be identified by the presence of a dark center spot or line, surrounded by a discolored area. The trouble is caused by minute pores or cracks in the underlying metal. Solution trapped in the pore or crack seeps out to discolor the brass. In spite of many claims there is no sure cure. Most of the materials used to correct "spotting out" depend on chromates for their principal ingredient. A solution of chromic acid is just as effective.

Spotting out is a transient phenomenon and weather conditions affect it greatly. Since it is caused by the underlying metal, a change in source or type of underlying metal affects the trouble. Heavier plating and thorough burnishing can, of course, minimize the trouble. Generally, "spotting out" takes time to develop; several weeks may be required.

An allied trouble is staining of brass plate. This is caused from attack of the brass plate by the atmosphere, and results from poor storage conditions, poor lacquering and similar factors. Stains appear similar to spots, but may lack the dark central point.

As can be noted from the comments made, there are many variables in brass plating. Maximum production efficiency depends on close control of all factors. Vast improvements can be made in most brass plating processes, without any major solution or equipment changes, by observing and controlling factors governing the process.

—Adapted for publication in PRODUCTS FINISHING from a paper presented before The Philadelphia Branch of The American Electroplaters' Society.

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Project Vanguard: Finishing the Man-Made Satellite

Unusual problems in finishing are faced by those who have the responsibility for coating the first man-made satellite. The man in charge of solving these problems is Dr. Georg Hass, chief of the Physics Research Laboratory at the Corps of Engineers' Research and Development Laboratories, Ft. Belvoir, Virginia. He is in charge of both developing and applying the coating that will protect the first sphere to be sent to outer space.

The purpose of this coating is three-fold: 1) give high reflectance to light to minimize heating by absorption of sun radiation; 2) act as a highly absorbing surface in the infrared to stabilize temperature by high radioactive power in the in-

frared; and 3) prevent corrosion of the magnesium surface.

Previous experiments in coating aluminum spheres with silicon monoxide have proved successful, but since the man-made satellite will be of magnesium it will be necessary to develop a highly oxidized silicon monoxide that will adhere strongly even during large temperature changes so that the sphere will be protected from corrosion.

It is proposed to first coat the magnesium with chromium, then with aluminum for high visible reflectance, and finally with silicon monoxide, which is expected to form a more strongly adhering coating than would silicon monoxide directly on magnesium. This coating will also protect the sphere from oxidation. Magnesium samples have been coated with the proposed film combination and have shown the desired properties.

The satellite, which is expected to help scientists learn more about the earth's shape and conditions in

Dr. Georg Hass, chief of the Physical Research Laboratory at the Army Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Virginia, is shown supervising the lowering of a man-made satellite into a vacuum vat for final application of coating. Dr. Hass developed and supervised application of the final coating that is being used on satellites for Project Vanguard. (Photo courtesy U. S. Army Corps of Engineers.)

outer space, will be a near-perfect sphere. Although it will be of magnesium, because of its lightness, it will have a sturdy inner structure to support instruments.

Four radio antennae will project outside the sphere to transmit information on the earth's shape, density of the outer atmosphere, temperatures inside and outside the ball, and other pertinent information. This cannot be recorded inside the shell because the ball is expected to burn up from heat caused by friction when it falls back to earth.

The sphere will be propelled into outer space by a three-stage rocket. It is to be launched at Patrick Air Force Base, Cocoa, Fla. The date of launching has not yet been revealed. It is believed that the sphere will follow an elliptical path that will take it within 200 miles of the earth and, perhaps as far away as 1,500 miles. Its brilliance is expected to make it visible in some areas of the country.

The Naval Research Laboratory has overall responsibility for the project, in which many firms and agencies are participating, and which is sponsored by the National Academy of Sciences for the International Geophysical Year starting next July.

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Plating Aluminum

Question: *We are interested in finding information on the electrodeposition of aluminum to copper magnet wire and the subsequent anodizing of this aluminum coating to provide electrical insulation qualities.*

We believe that a thickness of 0.0008 to 0.001 inch of aluminum and anodize to 0.0003 to 0.0005 inch would give us the desired qualities.

We would also like to know if you have any information on the coefficient of expansion of this anodized coating; what are the electrical insulation properties at temperatures of 1000 to 1200 deg. F.?

We would greatly appreciate any information or possible literature references you might supply.

J. B.

Answer: You may secure information on the deposition of aluminum on copper wire by writing the National Bureau of Standards, Washington 25, D. C. This organization has performed work on plating aluminum from an organic solution, and can advise you regarding the technique for this process. We are also referring you to a company from whom information could be secured regarding the patented process for application of aluminum by hot dip.

We are also referring you to two additional sources for information on the properties of anodized coatings on aluminum over copper.

★ ★ ★

Recovering Silver

Question: *We have a sodium cyanide stripping solution for silver, and a sodium cyanide silver plating solution. Could you please give us information on the steps we should follow to precipitate the silver from these solutions?*

J. R. P.

Answer: To precipitate silver from cyanide solutions we suggest that the clear solution containing silver and sodium cyanide be placed in a 25-gallon crock or stone jar outside your building or directly under a very strong exhaust fan. To the clear solution add small quantities of dilute muriatic acid, stirring constantly. When the addition of acid ceases to produce foaming and gas, the reaction is completed. CAUTION—Poisonous hydrocyanic gas is produced. Hence, some sort of mask should be worn or great care exercised so that the fumes are not inhaled.

Allow the white or muddy solution to settle, siphon off the clear liquid, add an equal quantity of water, stir constantly, allow to settle, siphon off water. The remaining mud contains silver chloride. If you desire to dis-

solve this in sodium cyanide to add to your regular silver solution, you can do so by first dissolving the sodium cyanide in water and then adding the solution to the precipitated silver chloride.

We are referring you to some companies to be contacted if you wish to sell the silver mud.

★ ★ ★

Chemical Polishing of Aluminum

Question: *In the October issue of PRODUCTS FINISHING you have an article by Henry Walker entitled, "Techniques for Surface Treatment of Aluminum." This article deals with electrolytic as well as chemical polishing. We are interested in these processes in relation to our problem of finishing castings.*

Would you advise me the name, or names, of companies in our area who could advise us regarding procedures for electrolytic or chemical polishing of this type. Would you also advise the name of a chemical company that handles the chemicals necessary for a company to set up its own chemical polishing procedures?

K. G.

Answer: In compliance with your request, we are referring you to several sources of supply for chemical polishing processes and chemicals.

These companies will be able to advise you regarding the equipment and materials necessary for this process. They can also suggest a company, or companies, in your area performing electrolytic polishing.

★ ★ ★

Plating Shop Maintenance

Question: *We have the problem of the maintenance of the paint on our electroplating shop equipment. The paint is quickly spoiled by solutions and fumes. We would like to have your opinion on which is the best suited paint for this purpose.*

We would like to have your opinion on epoxy-base paints.

F. G.

Answer: We are suggesting sources from whom you can secure the information you need. These companies can advise you regarding the selection of the correct maintenance paint, and also outline proper methods of application so that you may secure proper coating life.

★ ★ ★

Metal Identification Kits

Question: *Would you please tell us who supplies a simple kit for spot-test identification of metals. We are primarily interested in tin and cadmium on steel.*

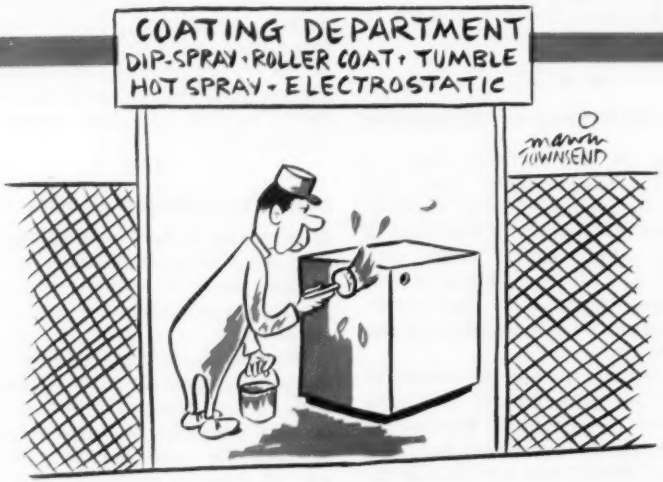
We also have a problem in producing small, steel, tin-plated transformer cans. During manufacturing, the tin coating may be damaged or scraped off and the fault may not be apparent. A ten-day humidity test on the units will cause corrosion of the steel where the tin has been damaged. It is not practical to tin-plate the units after all manufacturing operations are finished. Do you know of a rapid test for determining the continuity of tin coating on these units? The surfaces to be tested are not all flat, free surfaces. Some are right angles and others have terminals protruding through the cans.

J. T.

Answer: We are referring you to several companies from whom you may secure information on metal identification kits.

Some of the companies to whom we have referred you will be able to suggest a rapid test for determining the continuity of tin coating on these units. The simplest test, of course, would be to dip one of the cases into a dilute solution of copper sulfate. Copper will be deposited on any bare steel surface.

A Survey of Paint



Part I: Use of the Spray Gun

By EZRA A. BLOUNT
Editor

products feature finishing

HISTORIANS TELL US that painting with a paint brush, even though it was a crude form of paint brush, was employed about 15,000 years ago, primarily for works of art.* Brush painting methods are still employed today (see above) even though many more modern methods have been devised.

Industrial paint finishing was performed with the brush, or by dipping, until about 82 years ago, when the spray gun was invented. The many advantages of the spray gun

*A statement in the Paris, France, magazine "Realites" (quoted in "DeVilbiss News") indicates that the Lascoux stone age paintings were sprayed rather than brushed. This would make the spray painting method some 20,000 years old.

Application Methods

led to its rapid adoption by paint finishers.

Spray guns to be used by individual operators are made in all kinds and varieties for an equal number of purposes. Organic coatings varying from thin, clear lacquers to heavy plastisols are being sprayed, and many types and designs of spray guns are required. Paint may be sprayed from a pressure tank in the individual spray finishing booth, or in a central paint room. In the latter case paint is circulated continually by paint pumps between the storage tank and the point of spray application.

One type of spray gun is designed to be used with an easily detachable container, or cup, to hold the paint to be sprayed.

Cup guns are often used where many colors must be sprayed, or in cases where comparatively few parts are to be finished in any one color. These guns are illustrated in Figs. 1 and 2. Figure 2 illustrates a siphon cup setup in which a specially designed siphon nozzle on the spray gun adds to the efficiency of the equipment.

The unit is recommended particularly for such applications as painting machinery, small products or small areas.

Spray guns generally used in finishing plants are those to which paint is pumped from a spray pressure tank or a central paint storage room. One example of such a gun is shown in Fig. 3.

Pointers on Spray Painting

Variations in fluid (paint) pressure, atomizing air pressure, spray

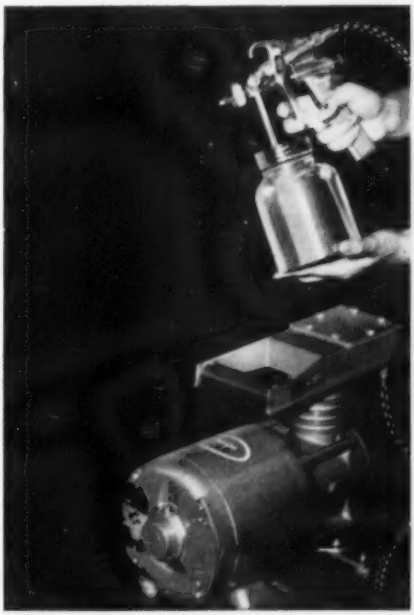


Fig. 1—This spray gun, which is fitted with a detachable cup, is designed to be used with portable air compressor. (Photograph courtesy Sharpe Mfg. Co., Los Angeles, Calif.)

"Operator skill and the employment of proper spray equipment combine to produce flawless finishes."

gun adjustment, and spraying technique employed by the spray operator all affect the efficiency of the spraying operation and the quality of the final finish. It is essential for the operator to use the most efficient combination of spray gun movements to produce the desired coverage of the product being sprayed.

Fig. 2 — Siphon cup setup for spray gun, known as 665F, is designed to be used on a Binks Model 18 Spray Gun, or it can be used with Models 19 and 29. The twin side ports make possible better atomization and a wider spray painting pattern. (Photograph courtesy Binks Manufacturing Company, Chicago 12, Illinois.)

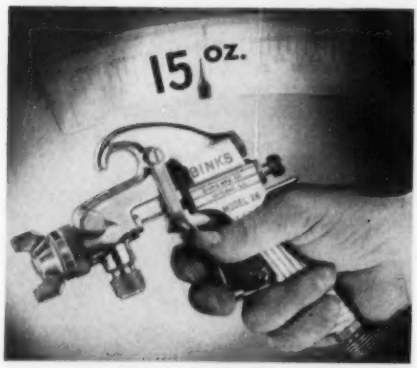


Fig. 3—Lightweight spray gun, designed for use with air or fluid lines, may be used for spraying lacquers, synthetic enamels and other finishes. Can be used advantageously for touchup painting, stencilling or blending. (Photo courtesy Binks Mfg. Co., Chicago, Ill.)

His spray gun should be adjusted for the proper flow of material from the gun nozzle, correct proportioning of atomizing air pressure to flow of material, and adjustment of the gun to produce the desired spray width and pattern.

Operator skill and the employment of proper spray equipment combine to produce flawless finishes. The application of too heavy a coat or uneven distribution of the sprayed paint may cause sagging. If the sags and runs in the wet paint film are caused by the application of too much material, fluid pressure on the spray tank should be reduced or spraying speed increased. If the spray gun is held at any angle other than 90 deg. (perpendicular) to the parts being sprayed, more material is supplied where the spray pattern is closest to the surface. Streaks may result from much the same incorrect spraying practice.

A dirty air cap or fluid tip on the spray gun may cause a heavy top or bottom pattern. "Split spray" will cause more material to be applied at top or bottom of the pattern. To correct this condition, fluid pressure should be increased or width of spray decreased.

Insufficient flow of the sprayed paint to produce a glossy, smooth surface may be due to improper atomization of the paint material as it leaves the spray gun nozzle, or the application of too thin a film. Some spray painting troubles and suggested corrections are shown in Table I.

Development and use of the prop-

Table I

SOME SPRAY PAINTING TROUBLES AND REMEDIES

TROUBLE	POSSIBLE CAUSES	SUGGESTED REMEDIES
SAGS	1. Dirty air cap and fluid tip.	1. Remove and clean cap and tip.
	2. Gun stroked too close to surface.	2. Stroke 6-10 inches from surface.
	3. Trigger not released at end of stroke.	3. Release trigger after every stroke.
	4. Gun stroked at wrong angle to surface.	4. Gun should be stroked at right angles to surface.
	5. Paint too cold.	5. Use an approved paint heater.
	6. Paint applied too heavy.	6. Calculate depth of wet film.
STREAKS	1. Dirty air cap and fluid tip.	1. Remove and clean cap and tip.
	2. Insufficient or incorrect overlapping of strokes.	2. Follow the previous stroke accurately. Deposit a wet coat.
	3. Gun stroked too rapidly.	3. Take deliberate slow stroke.
	4. Gun stroked at wrong angle to surface.	4. Gun should be stroked at right angles to surface.
	5. Stroking too far from surface.	5. Stroke 6-10 inches from surface.
	6. Too much air pressure.	6. Use minimum air pressure needed.
	7. Split spray.	7. Clean fluid tip and air cap.
	8. Paint too cold.	8. Heat paint to get good flowout.
ORANGE-PEEL	1. Paint not thinned out sufficiently.	1. Add correct amount of solvent by measure.
	2. Paint too cold.	2. Heat to get good flowout.
	3. Not depositing a wet coat.	3. Check solvent. Use correct speed and overlap of stroke.
	4. Gun stroked too rapidly.	4. Take deliberate slow stroke.
	5. Insufficient air pressure.	5. Increase air pressure or reduce fluid pressure.
	6. Using wrong air cap or nozzle.	6. Select correct air and nozzle for material and feed.
	7. Gun stroked too far from surface.	7. Stroke 6-10 inches from surface.
	8. Overspray striking a previously sprayed surface.	8. Spray detail parts first. End with a wet coat.
EXCESSIVE PAINT LOSS	1. Not triggering at each stroke.	1. Release trigger after stroke.
	2. Stroking at wrong angle.	2. Stroke at right angle to surface.
	3. Stroking too far from surface.	3. Stroke 6-10 inches from surface.
	4. Wrong air cap or fluid tip.	4. Use correct setup.
	5. Depositing paint film of irregular thickness.	5. Make it a practice to calculate the depth of wet film.
	6. Fluid pressure too high.	6. Reduce pressure. If pressure keeps climbing, clean regulator on pressure tank.
	7. Air pressure too high.	7. Use minimum air needed.

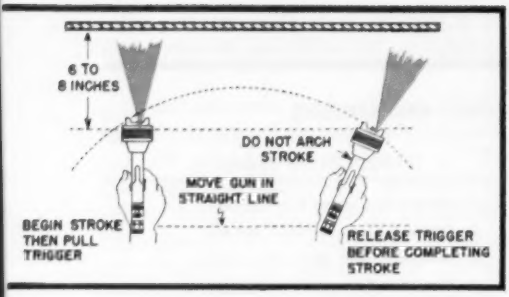


Fig. 4—Proper method of making a spray gun stroke is shown above: gun should be moved in a straight line, not in an arc. It should be triggered at start and finish of each stroke. (Photo courtesy the DeVilbiss Co.)

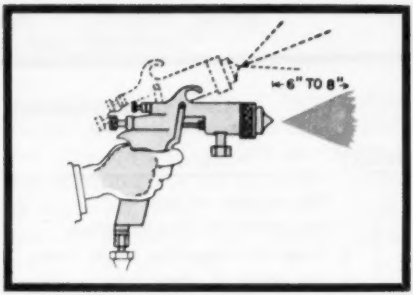


Fig. 5—While spray gun is being moved in a straight line, it should also be held perpendicular to the surface, as shown by the solid lines in the illustration. (Photograph courtesy the DeVilbiss Co., Toledo, Ohio.)

er spraying technique is essential. Figures 4 and 5 show some of the things to consider in spraying a flat surface correctly. The proper way to make a spray gun stroke is to avoid swinging the spray gun in an arc. An inexperienced sprayer may have a tendency to wave the spray gun as he sprays. Arcing the gun turns it off the target, especially at the end of a stroke. Also, too much paint is applied at the center of the stroke and too little at the extreme ends. The distance between the gun and the work may vary almost 2 to 1 throughout the stroke. One common trouble under such conditions is that the center of the stroke is wet while the ends are dry. Arcing the spray gun makes it impossible to apply a uniform coating.

The proper procedure is to hold the gun at right angles to the surface at all times and to trigger the gun at each end of the stroke as shown in Fig. 4. Begin the stroke, then pull the trigger. At end of the stroke, release the trigger before the stroke is completed.

One mistake which often accounts for improper use of the gun is the practice of adjusting the fluid flow by means of the adjusting screw on the spray gun. Turning this adjusting screw to reduce the material flow increases the spring tension on the trigger. This makes the trigger more difficult to pull and may tire the operator's hand. Thus, there is a tendency to trigger the gun improperly. To overcome this difficulty the fluid adjusting screw on the gun should be left wide open, and the necessary adjustment should be made at the pressure tank or at the fluid regulator. A good rule to follow is to use the lowest air pressure possible for satisfactory results. Once the fluid and air pressure for a particular job are determined, the adjustments should be set and not changed until the job is finished.

The spray gun should be held perpendicular to the surface at all times. Figure 5 illustrates by solid lines the correct position for the spray gun. Dotted lines indicate an incorrect position of the gun. Spray guns are designed to be held, gen-

"The operator should decide on a distance, depending upon the pattern and speed of flow . . ."

erally, six to eight inches from the work. The operator should decide on a distance, depending upon the pattern and speed of flow of the material he happens to be working with at the time. Once set, this distance from the work should be kept constant for uniform results. In the spraying process, liquids are atomized and solvents are vaporized. The optimum distance should permit the maximum effect in both, with the proper amount of thinner losses between the spray gun and the work.

Figure 6 illustrates both the improper and correct methods of spraying corners. When the spray gun is operated up and past the corner, as shown, in painting one side, a certain amount of spray is sure to be deposited around the corner. As a result, when the other side is sprayed, there will be overspray around the corners on both surfaces. To remedy this, the sides

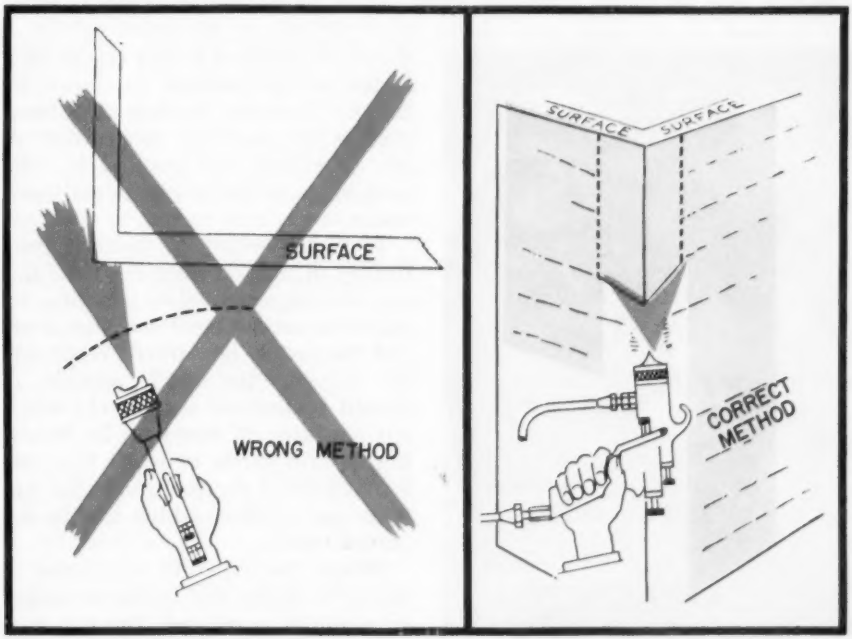


Fig. 6—The illustration at left shows how NOT to obtain the best spray finishing results. The correct method of spraying sides and corners of a rectangular product is shown in the illustration at right. By holding the spray gun at an angle with the corner, the gun can be raised and lowered to paint both sides of corner simultaneously, thus lessening overspray. (Illustrations courtesy The DeVilbiss Co., Toledo 1, Ohio.)

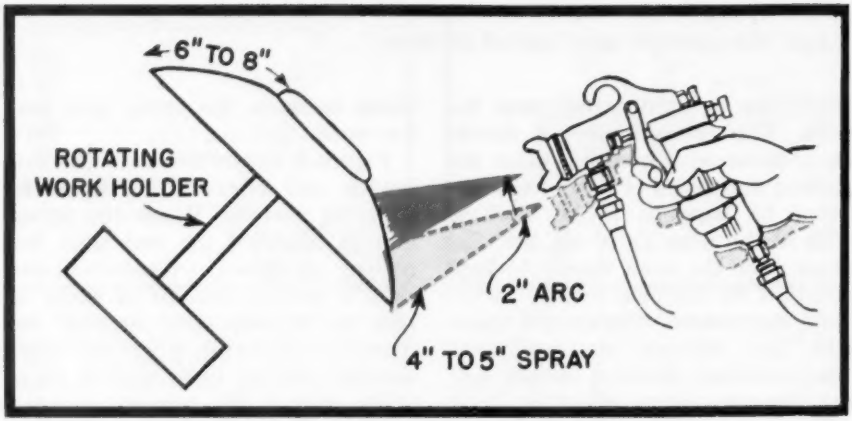


Fig. 7—Setup for spraying an object while it is spinning or rotating. The spray gun can be held open while the product is spinning. (Photo courtesy the DeVilbiss Co., Toledo 1, Ohio.)

Fig. 8 — Narrow strips of "Scotch" Brand Masking Tape No. 214 are applied to typewriter covers for spray painting and baking. Tape leaves sharp design. (Photo courtesy Minnesota Mining & Mfg. Co., St. Paul, Minn.)

should be painted within one or two inches of the corners as shown in Fig. 6. Then, by holding the spray gun at an angle to the corner, it can be raised and lowered to coat both sides of the corner simultaneously.

It is important to keep a continuity of motion from the time the gun is triggered when starting to paint an article until the gun is off and the article is painted. Wherever the shape of the article permits, it should be painted completely without shutting off the gun. In finishing certain kinds of work this can be facilitated by mounting the articles on a fixture which can be revolved easily.

Where the object to be painted is of such a shape that it can be sprayed while it is rotated, the gun can be held open from beginning to end of the stroke. Figure 7 shows the method used in spraying the metal hubs of wheels. The work here is held and rotated by the work hold-

er. For this job, a 5-inch spray is used. As the hub rotates, the operator simply pulls the trigger back and turns the gun in a 2-inch arc, thereby painting the hub in one continuous motion. In any spray finishing operation, it is desirable to use the fewest number of strokes and least amount of motion necessary to obtain the desired coverage. The design and use of fixtures will assist in carrying out this principle in finishing many types of metal products.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

A.S.T.M. Standards on Zinc-Coated Iron and Steel Products. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. 143 pages. Price, $2.25.

This publication presents A.S.T.M. standards and tentative methods for test and specifications pertaining to metallic-coated iron and steel products of various kinds.

This compilation is sponsored by Committee A-5 on Corrosion of Iron and Steel. Included are all specifications coming under the jurisdiction of this committee. In addition, selected specifications written by Committees A-1 on Steel, A-2 on Wrought Iron, B-1 on Wires for Electrical Conductors, and B-2 on Non-Ferrous Metals and Alloys are in this compilation.

Included in the volume are 21 specifications, of which four are new or recently revised; three recommended practices, two of which are new and give methods of tests. Among the materials covered are wire, strands, fencing, sheets, hardware, terne-alloy-coated sheets and other products.

★ ★ ★

Development of a Coating, Pretreatment, for Metals (Wash Primer). The final report on Army-sponsored development of a one-package pretreatment coating for steel, aluminum and magnesium. Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. 122 pages. Price, $3.25.

A wash primer, Formula XP-7, with pigment composition of 50 per cent strontium chromate and 50 per cent zinc chromate produced the best corrosion inhibition and stability properties of more than 150 coating formulations examined. Polyvinyl butyral was superior among resins tested as vehicles.

★ ★ ★

How to Apply and Sinter Fluorocarbon Coatings, by Gene Bartczak. A 16-page technical report, available from Gene Bartczak Associates, 119 Soifer Ave., North Bellmore, L. I., N. Y. Price, 50 cents.

High-polymer fluorocarbons are being used increasingly as protective coatings for severe service conditions. The proper choice and use of these relatively new coatings is discussed.

The report contains information on fluorocarbon coating application and use. It discusses the use of fluorocarbons where severe corrosion, extreme temperatures, electrical insulation, abrasion, "sticking" and other factors, singly or in combination, are problems. The user is guided in selection of fluorocarbon to best overcome the problem, preparation of surfaces, application and "curing" of coatings.

Protective Coatings for Titanium

Pretreatment method, devised by National Bureau of Standards, allows deposition of adherent plated film . . .

THE NATIONAL BUREAU OF STANDARDS has successfully electrodeposited hard, adherent protective coatings on titanium. The procedure involves forming a titanium fluoride film on the metal surface, electroplating with chromium, and heat-treating the plated specimen at 1472 deg. F. Developed for the Springfield Armory by C. L. Stanley and A. Brenner of the Bureau staff, the process is expected to extend considerably the utility of titanium metal, particularly for high-temperature applications.

Because of titanium's high strength-to-weight ratio, it ranks with steel and aluminum as a structural material. However, titanium has disadvantages for some applications: it tends to gall or seize when in loaded contact with itself or other metals, and it oxidizes at elevated temperatures. These disadvantages could be minimized if titanium were coated with hard, oxidation-resistant metals such as chromium or nickel, but previous attempts to produce such coatings have not been entirely successful. Although the Bureau had obtained good adhesion of aluminum to titanium in an earlier investigation using a nonaqueous plating bath, the method was not suitable for job-shop applications and the results were not sufficiently consistent.

The main problem in depositing metals on titanium is lack of adhesion. Some deposits have actually exfoliated during the plating operation and others have been easily pulled off with the fingers. Poor adhesion has been blamed on an oxide film on the base metal, but attempts to remove the suspected film with acid etches or anodic treatments have not been successful. For this reason, the present investigation included a study of the influence of oxide films and methods to remove them.

In a preliminary investigation, the Bureau designed an experiment intended to remove any oxide film and to plate the titanium specimen before it could reoxidize. In this procedure, a small piece of titanium was enclosed in an evacuated tube containing silicon carbide and ceramic balls. The tube was tumbled for several hours to abrade the metal

surface and then placed in a chromium plating bath, where it was crushed so as to expose the metal specimen to the bath before the atmosphere could touch it. In a control experiment, a titanium specimen was similarly abraded in an open tube. The adhesion of the first specimen was distinctly better than

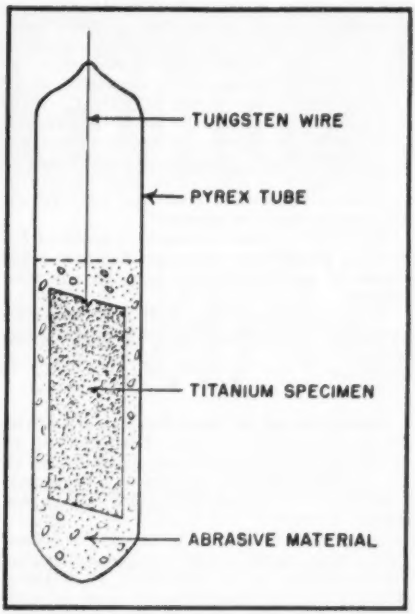


Fig. 1—Diagram of glass tube assembly used by National Bureau of Standards to investigate the effect of an oxide film on plating titanium. The specimen is suspended from a tungsten wire in the evacuated tube. The tube is agitated so that abrasives in the tube remove any film from the specimen. Then the tube is placed in a regular chromium plating bath and crushed with pincers so that plating begins before the titanium can reoxidize. The experiment indicates that a film, probably an oxide of some kind, generally exists on titanium and must be removed before adherent coatings of chromium can be electroplated on titanium surface.

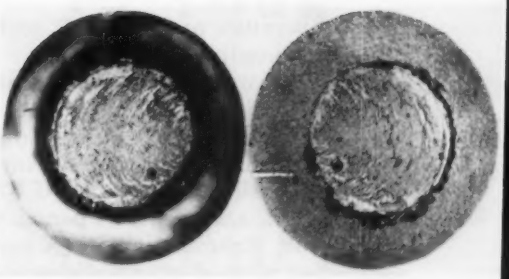


Fig. 2—Photomicrographs of fractured metal surfaces after nodule test for adhesion of heat-treated chromium on titanium. The fracture has occurred in the chromium, leaving some still bonded to the titanium. Left photo is underside of nodule; right is surface of specimen. (Illustrations courtesy National Bureau of Standards, Washington, D. C.)

that of the control, supporting the hypothesis that a film, probably an oxide, exists on the surface of titanium and impairs adhesion of metal deposits.

The Bureau investigated a number of etching and plating procedures and obtained the best chromium plates by pretreating titanium to form a coating of titanium fluoride before plating the specimen. This procedure appears to prevent the formation of an oxide and, when the specimen is placed in the plating bath, the titanium fluoride dissolves, permitting the chromium to bond directly to the basis metal.

Titanium specimens are thoroughly degreased and cleaned before this treatment. Next they are dried and suspended in a solution of hydrofluoric and acetic acids. After 10 or 15 minutes a 60-cycle alternating current is passed through the specimen for another 10 minutes. The specimens are then rinsed and transferred to a conventional chromium plating bath, where they are plated

at a temperature of 185 deg. F. and a current density of 1116 a.s.f.

Chemical analysis indicates that the film produced by the preliminary acid treatment contains a low valence titanium compound. A sample of the dried film contained 37 per cent of titanium and 54 per cent of fluorine. Examination by X-ray diffraction showed no lines characteristic of titanium tetrafluoride.

Tensile strength tests indicate that adherence of the chromium coating to titanium is greatly improved by heat-treating the plated specimen for two minutes at 1472 deg. F. in an inert atmosphere. Coating adhesion was determined by the nodule method. Essentially this procedure consists of electrodepositing a cobalt nodule, 1/16 inch in diameter, on the coating and then determining the force necessary to detach the nodule together with the coating from the basis metal. The bond strength of the heat-treated specimens ranged from 4,000 to 18,000 lbs./sq. in. Although the highest value obtained is somewhat below the tensile strength of heat-treated chromium, fracture occurred in all cases in the chromium plate and not between the two metals.

Coatings on titanium consisting of 0.02 mm. of chromium plus 0.15 mm. of nickel were found to be moderately adherent without heat treatment, but not comparable to that of chromium on steel. If such specimens 0.5 inch wide are broken by repeated bending, the chromium-nickel coatings can be stripped from the titanium with a force of about 10 pounds.

Procedures for depositing nickel and copper on titanium have been formulated that are similar to the process for depositing chromium. However, the nickel and copper deposits have not adhered as well as chromium and have frequently blistered.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Evaluation of Surface Treatments for Low-Alloy Steels. Prepared by Sam Tour & Co., Inc. for Wright Air Development Center. Available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Published in two volumes: Part 1—PB 121087, Nov. 1954, 29 pages, 75 cents; Part 2—PB 121088, Nov. 1954, 21 pages, 75 cents.

This report is a study of heat-resistant, corrosion-protective coatings for low alloy steels used in aircraft.

The first volume presents a method for testing protective coatings for low alloy steels in two artificially created environments.

Volume 2 describes diffusion coatings produced by chromizing and siliconizing.

★ ★ ★

Development of Heat-Resistant Paints. By M. Kornbluth, Corps of Engineers, U. S. Army. May be ordered from OTS, U. S. Department of Commerce, Washington 25, D. C. Report PB 111957. 153 pages. Price, $4.00.

Development of a ceramic-frit, silicone-resin-type paint capable of withstanding temperatures up to 1400 deg. F. without significant deterioration or loss of protective properties is described in this report.

The paint was needed by the Army to reduce the accelerated oxidation and rapid destruction of steel components which, under normal conditions of use, are heated to high temperatures in oxidizing atmospheres, such as mufflers and manifolds on automobiles.

Experimental investigations revealed that paints consisting of a blend of ceramic frits, pigments, and refractories at a pigment volume concentration of 35 to 40 per cent, with a frit to pigment and refractory ratio of 3 to 1, were superior in heat resistance. After development of the paint, a procurement specification was prepared, which is included in the report.

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Burr Removal by Barrel Finishing

Burrs and sharp edges occur on metallic objects as a result of forming or stamping operations or other machining processes. If the parts are made individually and by hand, burr removal is a natural part of the machinist's task. With large-scale production on modern automatic equipment, however, the opportunity for hand finishing disappears. Nevertheless, the need for burr-free parts continues, and it is necessary either to introduce a manual operation at the appropriate point in the process or to devise some automatic means of accomplishing this goal.

Barrel Finishing

The barrel finishing operation provides a technique for deburring small and medium-sized parts with considerably less labor cost than is needed for completely manual working. In the barrel finishing operation, a definite quantity of metal parts (which may vary from one part to several thousand parts, depending on size) is placed in a horizontal enclosed barrel together with water, a cleaning compound, and the media. Rotation of the barrel causes the parts to slide against the media, and produces the cutting or grinding action necessary for deburring.

Polishing or burnishing of the metal surface can also be achieved in the barrel, and to some degree this action is accomplished simultaneously with deburring. However, for the best deburring action or for the best surface finish improvement, certain types of cleaning compounds and media are necessary. This paper deals entirely with burr removal,

and any improvement of the surface finish is considered to be incidental.

Research Investigations

There are many variables in the barrel finishing operation, including shape of barrel, degree of loading, ratio of work to media, speed of rotation, types of cleaning compound and media, and operational technique. A research study of many of these factors was completed recently by the Transmissions Operations Group of Allison Division, General Motors Corporation. The purpose of this investigation was to determine the economics and potentialities of barrel finishing as a means of burr removal. Parts currently in production were studied, and the research conducted so as to serve as a guide for future parts as well. These studies have been reported by Charles E. Kincaid, senior process engineer, Master Mechanics Division of Allison, and this report and subsequent discussions have served as the basis for the present paper. The writer acknowledges his indebtedness to Mr. Kincaid and to the Allison Division of General Motors for permission to use this information and data.

Barrel Finishing Techniques

Four quite different techniques of barrel finishing are employed at the

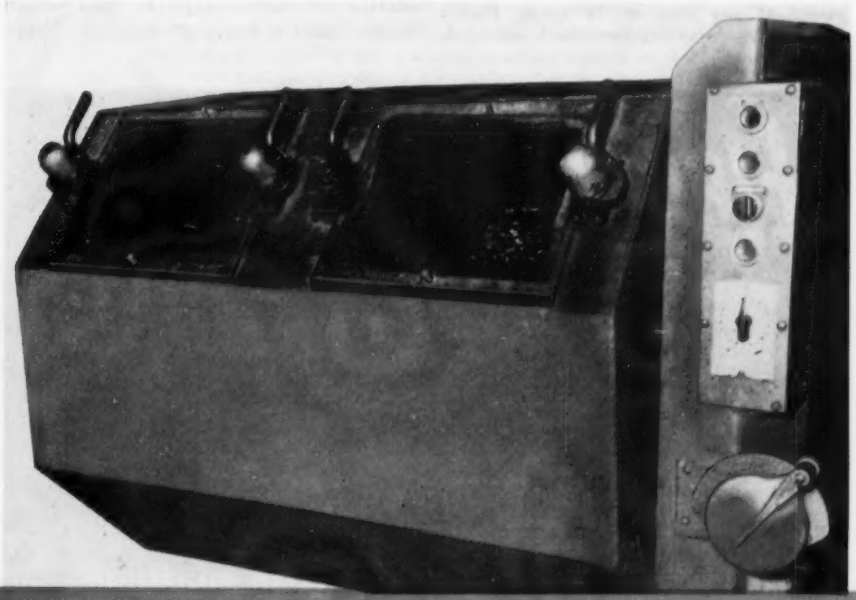

Fig. 1—This two-compartment barrel is used for processing parts in the loose state. Allison investigation showed that best results were secured when the barrel was loaded 50 to 60 per cent full of media and 15-20 per cent full of parts. Total mass should not be over 75 per cent of barrel capacity in order to secure the maximum slide.

Allison Division, and all were studied in this research investigation. These operational techniques are as follows: processing in the loose state, processing in multiple-compartment barrels, processing on arbors or fixtures, and self-processing of parts.

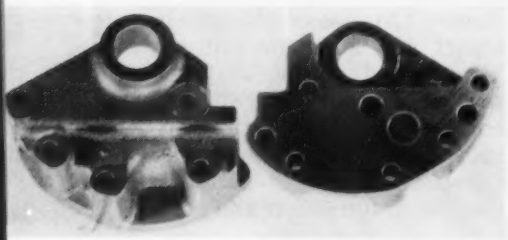

Fig. 2—These transmission brackets are examples of parts processed in loose state. During Allison investigation, 60 of these brackets per load were processed in a 36-inch diameter, two-compartment barrel for a period of one hour at 10 r.p.m. Media: grinding type; cleaning compound: soda ash.

Processing in the Loose State

This is the most widely used technique. It consists of placing the parts loose in the barrel together with the media, water, and cleaning compound. Important variables in this process are barrel loading, ratio of work to media, barrel speed, and total processing time, as well as the characteristics of the work, and type of media and cleaning compound.

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small and simple parts, this care is not so urgent. Damage during loading can be minimized or avoided by adding the load in portions, and rotating the barrel between additions so the work will bury itself in the media. In the unloading operation, it is necessary to separate the parts from the media. With the largest parts, this is done by hand; smaller parts can be discharged from the barrel into a wire basket that retains the work and permits the media to fall through. Very small parts can be separated on a vibrating screen, or by a magnetic separator.

After barrel finishing, the parts are usually placed in tote pans and dipped into an emulsion of soluble oil in water. This prevents the formation of rust, which would otherwise occur in a very short time because the cleaned metal surface is in a highly active condition. The oil also prevents drying of media breakdown dust on the surfaces, and is an aid in subsequent cleaning operations.

Fig. 3—Another example of parts processed in loose state. These brass bearing races were processed, several thousand at a time, in a 36-inch diameter barrel for four hours, then unloaded and separated from media in a mechanical separator. Primary objective of processing this part was to secure certain radius around edge of part; burr removal was secondary. After processing, the radius on the two lower parts was 0.0015 inch. Note sharp edge on the part at top of photo.

Processing in Multiple-Compartment Barrels

Larger parts with regular peripheral surfaces can be barrel finished in individual compartments. Brake anchors 22 inches in diameter and 4 inches wide are deburred in multiple-compartment barrels that are about 6 inches wide.

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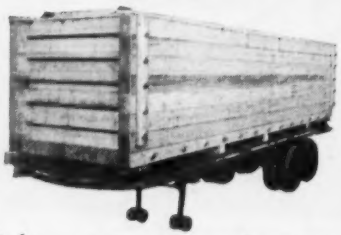

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This type of operation is necessary for processing such large parts as the brake anchors, which weigh 40 pounds each, in order to prevent the parts from damaging each other. Breakdown of the media is much more rapid than in loose processing, because the heavy part tends to roll rather than to slide, and in rolling, the granules are entrapped and crushed.

Processing on Arbors or Fixtures

Large parts of highly irregular periphery cannot be handled satisfactorily in a multiple-compartment barrel because the projections cause damage to the barrel lining as well as to themselves. This damage is eliminated by mounting the part, or several parts, on a rigid fixture within the barrel. The loading and

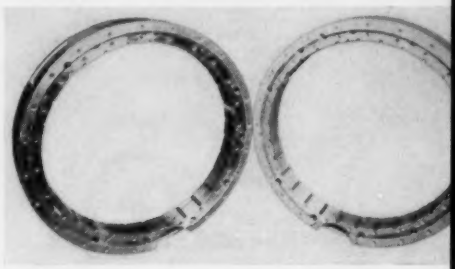

Fig. 5 — Multiple-compartment method of barrel finishing is used on parts having regular or smooth peripheral surface. Brake anchors shown in illustration are 22 inches in diameter, four inches wide, weigh 40 pounds each. Such parts are too large or too heavy to be processed in loose state.

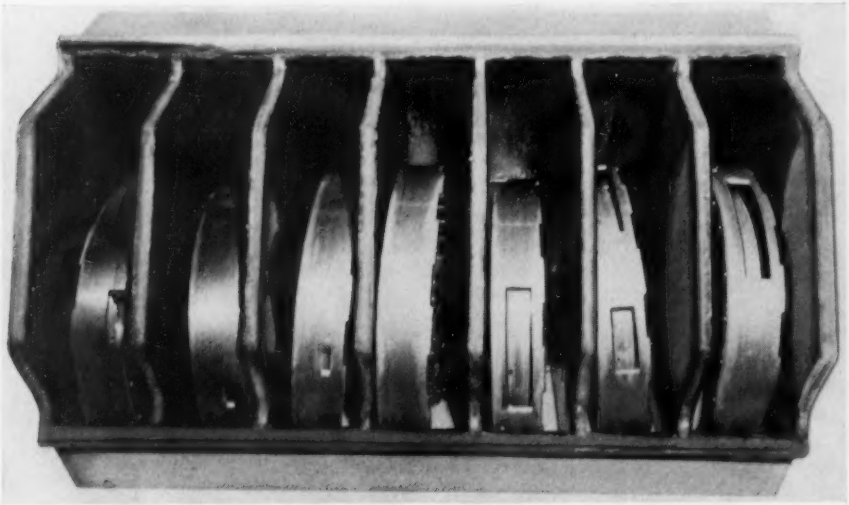

Fig. 4—Brake anchors are processed in this multiple-compartment-type barrel. Parts are four inches wide and compartments are six inches wide. There is little room for media to work around part as barrel rotates. Parts tend to roll more than slide, trapping media against side of barrel and fracturing it. This is a disadvantage. Breakdown can be retarded by rotating barrel slowly, however. Method is advantageous for some parts.

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unloading time is a disadvantage of this method, but the total labor time is considerably less than for hand deburring without using a barrel. For one specific part studied in the Allison research, the total labor saving by barrel finishing was 65 per cent, even allowing for the mounting and for some hand finishing that was still necessary after the barrel operation.

Self-processing of Parts

On small punch-press parts where finish is of minor importance, barrel finishing without the use of any media can be employed for deburring. Washers and small plates are processed with only water and a fine abrasive. The abrasive is far less coarse than a grinding medium would be, and serves principally to prevent the parts sticking together and to the sides of the barrel. The abrasive probably speeds up the deburring process to a slight degree, but the principal burr removal is performed by the parts themselves. The processed parts are scratched and nicked, but the operation is quite satisfactory when the degree of surface finish is not important.

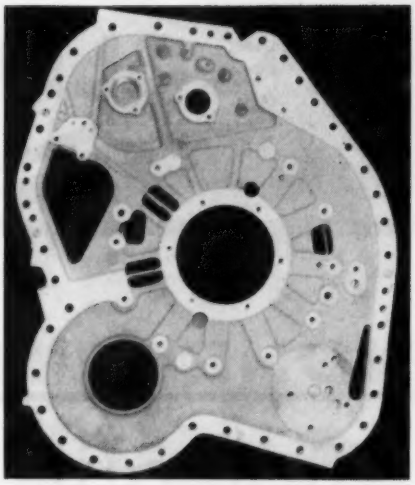
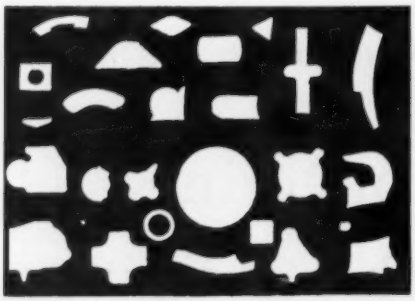


Fig. 6—Parts that have irregular peripheral surface can be processed using arbors and/or fixtures. This type of part cannot be processed in multiple-compartment barrel because surface projections may damage barrel lining or strike other parts. Transmission end plate (above) is processed using arbors and fixtures. Fixture fits in center of part; part and fixture are then mounted on arbor.

Barrel Shape, Loading and Speed

Barrels used for this process may be of various shapes, but for the removal of burrs from metal objects, an octagonal cross-section is preferred. The flat sides tend to lift



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the entire mass, including the work and the media, to an angle at which it slides to the opposite side of the barrel. Most of the grinding (and polishing) action takes place during this sliding.

In loose-state processing, the best results were obtained when the barrel was filled from 50 to 60 per cent with media and from 15 to 20 per cent with parts. The total volume of the mass should not exceed 75 per cent of the barrel capacity, in order to secure maximum slide.

As a guide for future operations for new parts, a ratio of 3 parts by weight of media to one part of ferrous metal parts appears to be a good rule. Actual experience may indicate that the optimum ratio may be as high as 6, but the 3:1 ratio is suggested for a trial run. For aluminum parts, the volume of individual parts is more important than the gross weight loading, and it is difficult to establish general rules in advance.

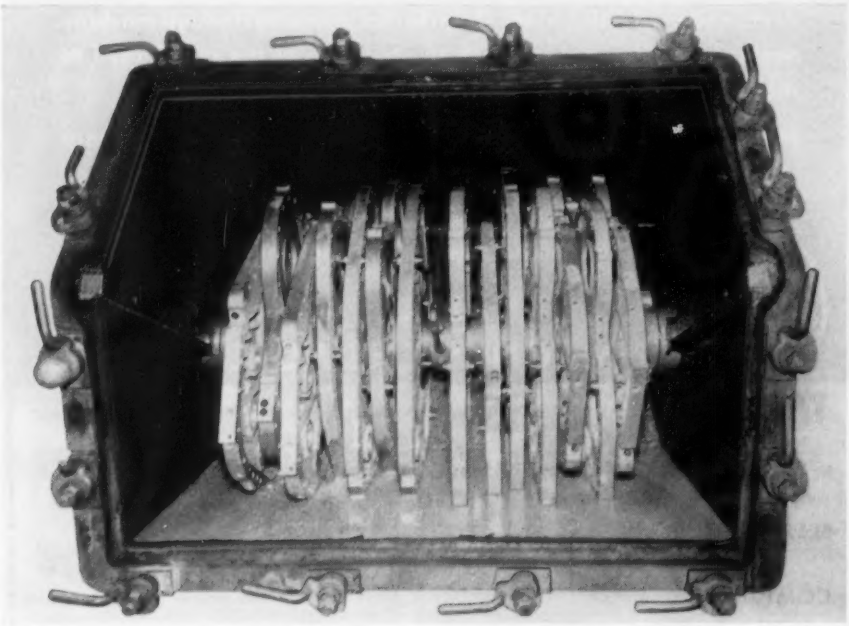

Fig. 7—Transmission end plates (see Fig. 6) being processed on arbors and fixtures. The 48-inch-diameter barrel accommodates 14 plates per load, finishes them at approximately 20 revolutions per minute, in 30 minutes. A keyed hub was placed on the center of each part and then fastened in place by three bolts. This assembly was placed on arbor, then parts and arbor were secured in barrel by a hinged collar fastened to end plates of barrel. Because of intricate shape of part, some hand burring was still required to get desired finish, but barrel finishing significantly reduced hand labor.

Harder, glossier FINISHES in less baking time!

ISOPHTHALIC — Oronite's new raw material offers manufacturers superior finishes heretofore unobtainable.

New Isophthalic based resins provide a harder finish that will retain its original gloss, with no yellowing effects. You get a finish that has better resistance to alkali, mineral spirits and water.

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The speed of rotation is important, since it governs the fraction of the mass which is in sliding motion at any instant. At too low a speed, only a small part of the mass is in movement, and the cycle time is unduly prolonged. At too high a speed, the mass drops from one side of the barrel to the other, instead of sliding. Deburring is not accomplished, and the parts may be damaged. For any given type of loading in a specific barrel, there is some optimum intermediate rotational speed that produces the best results in the shortest time.

Media

Three types of media were investigated in the Allison experiments. The natural media, such as limestone and granite pebbles, are cheapest, but are not fully satisfactory when used alone. The media should break down at a reasonable rate, so that its surface is perpetually rough and suitable for grinding or cutting. The natural stones break down too slowly to maintain this type of surface, but they are fully satisfactory if used in conjunction with a fine abrasive compound.

A manufactured alumina or aluminum oxide media overcomes this difficulty because it has a faster rate of breakdown, and the pieces are

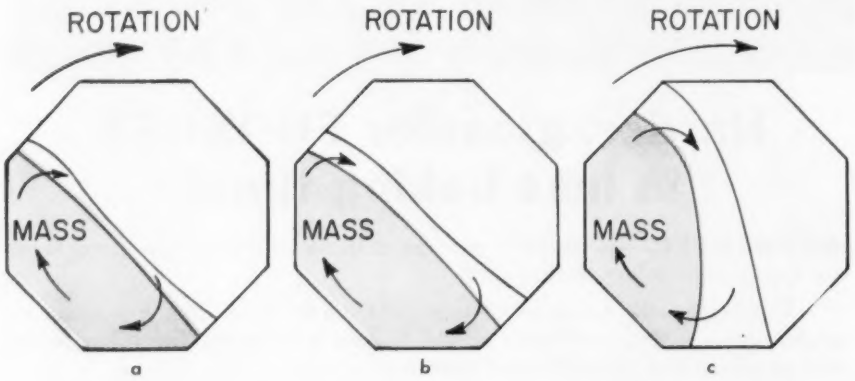
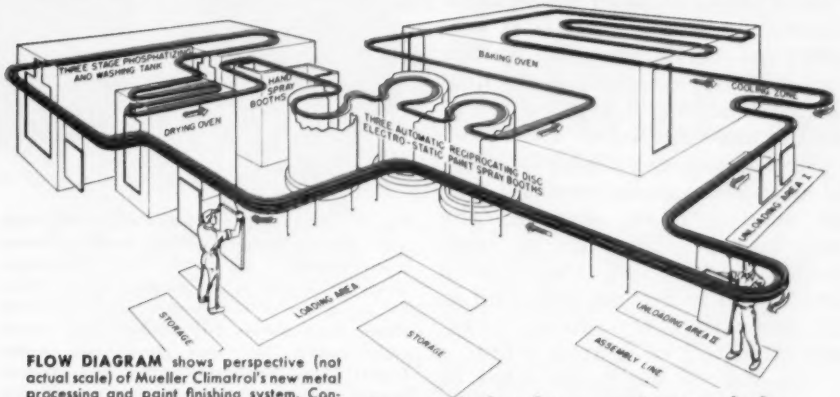


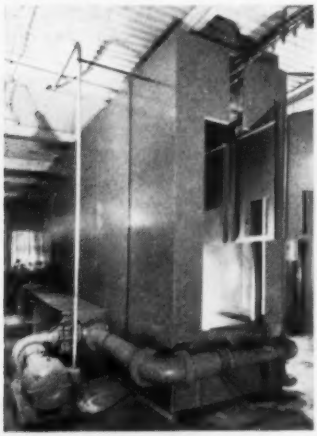
Fig. 8—Speed of rotation is important in securing optimum results from barrel finishing. As barrel rotates, its flat sides lift the contents to a point where they begin to slide to the opposite side. In this sliding action, the media grinds the parts, removing burrs. If barrel revolves too slowly, effective sliding area is at a minimum and the parts will not slide from one side of the barrel to the other. Consequently, there is no burring action. Too fast a barrel speed causes the parts to be carried beyond point where effective slide begins, allowing parts to drop from one side of barrel to the other, possibly damaging parts. Barrel "a" is shown rotating at 10 r.p.m., the effective sliding area being between the lines. Arrows indicate path followed by parts during rotation. Barrel "b" is rotating at 20 r.p.m. and effective sliding area has increased in thickness. Barrel "c" is rotating at 30 r.p.m., producing a sliding area that is steeper and wider than with slower speeds. During slide, parts are subjected to a grinding and/or polishing action by sliding media. Octagon-shaped barrel is preferable for deburring.

TWO SHIFTS TO ONE SHIFT

with no lost time . . . no lost production!



FLOW DIAGRAM shows perspective (not actual scale) of Mueller Climatrol's new metal processing and paint finishing system. Conveyor is 1300 ft. long; travels 15 ft. per min.



THREE STAGE cleaning and phosphatizing unit is 88 ft. long. Here, metal parts are detergent-washed, chemically treated to convert the surface of the metal to an iron-phosphate coating, rinsed and sprayed with a dilute chromic, phosphoric acid solution.

Despatch finishing equipment helps Mueller Climatrol make fast switch

Painting was a bottleneck at the Mueller Climatrol Division, Worthington Corporation, Milwaukee, Wisconsin.

They had to run two shifts, each 50 hours a week, and had a hard time keeping up on furnace casings and an increasing amount of air conditioning components.

Now they're running one shift, 40 hours a week, thanks to a new system that was put into action smoothly and quickly with no lost time . . . no lost production!

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16 colorful pages on modern ways to achieve better finishes, faster production and smoother handling of metal products . . . at lower cost.

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covered with many minute sharp cutting edges. If rapid deburring is desired, an alumina media is preferable to a natural pebble. In one phase of the research, cycle time was reduced 66 per cent by use of an alumina material.

Steel shapes can also be employed as grinding media, provided they are used with an abrasive. The steel may be either soft or heat-treated for hardness. The abrasive grains tend to become imbedded in the steel surface, and produce an excellent cutting or lapping action.

The size of the media must be controlled, depending on the nature of the work. Particles should not be of a size that will lodge in crevices

Fig. 9—As media and parts slide past each other during barrel finishing, media removes small particles of metal from the parts, much the same as a grinding wheel. Thus to be effective the media must maintain clean, sharp cutting edges. Illustration shows clean media (left) and glazed-over media (right). Clean media stayed that way because proper amount of cleaning compound was used. Media on right was glazed by particles of aluminum. (Photographs courtesy "General Motors Engineering Journal.")

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in the work being processed. Small particles are too light to give rapid deburring, and accordingly are not used for this purpose although they may be suitable for surface finishing. Too large particles, on the other hand, have a peening or rolling effect on edges of the work.

Cleaning Compound

This research showed that some type of cleaning compound should invariably be used in wet barrel finishing operations. The cleaning materials remove oils and greases left on the parts from earlier machining steps, and so eliminate the lubricating effect of the oils. Little or no removal of burrs is accomplished if the parts sliding over each other carry films of lubricant.

A second purpose of cleaning compounds is to keep the surface of the media free from metallic buildup. Fine particles released from the metal during deburring should be kept in suspension in the solution; this is aided by the cleaner. In the absence of a cleaning compound, the fine metallic particles adhere to the media and give the surface a glazed condition that is not at all suitable for burr removal.

Excessive cleaning compound is almost as undesirable as too little, since it causes the formation of suds which reduces the cutting action. A sufficient volume of solution is necessary to cleanse the media and to hold the dirt in suspension. Fastest deburring is realized when the solution level is maintained as low as possible consistent with this cleaning action.

Summary

Barrel finishing is not a cure-all for all types of deburring problems, but, where it is applicable, there are numerous advantages in its use. Parts of unusual size or shape are not adaptable to barrel deburring, and the method is only economical for production runs of large volume.

Barrel finishing produces a more uniform overall finish than can be achieved by manual deburring. It is generally less expensive than the hand operation because less direct labor is involved; it is also considerably faster and produces similar results time after time.

The importance of good records should be emphasized. Complete data, even on trial runs, should be kept on each type of part; this data should include all of the major variables such as type and size of barrel, number or weight of parts per load, nature and weight of media, volume and concentration of cleaner, cycle time, and speed of rotation. These records are useful in improving quality or production rate, and are especially valuable when making a later run of the same or similar parts.

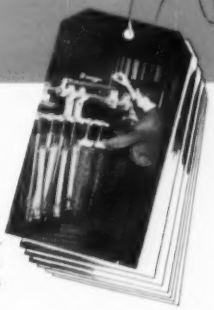
★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Stress Corrosion Cracking and Embrittlement. Edited by William D. Robertson. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 202 pages. Price, $7.50.

A compilation of the major developments in the last twelve years in stress corrosion cracking and embrittlement. This symposium was held under the auspices of the Corrosion Division of the Electrochemical Society. Includes fourteen papers from four countries, reflecting significant work done in university laboratories and in industry.

From H-VW-M

10 important ways to keep metal finishing costs down



All the processes, supplies and equipment in H-VW-M's line have been designed for maximum efficiency and cost savings. But among this full line are a group of products and processes which – if they apply to your operations – can offer outstanding costs and labor saving advantages. Included in this group are high-efficiency electrical and processing equipment, unusual processes, and finishing supplies having unique advantages.

The scope of the exceptional H-VW-M products, described on the following pages, covers a wide range of plating and finishing operations of every type, and the likelihood is strong that several, or perhaps all, are applicable to your plating plant. By investigating all of them, you should strike just the process, equipment or supplies you need to effect very real economies in your operations.

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MATAWAN, NEW JERSEY

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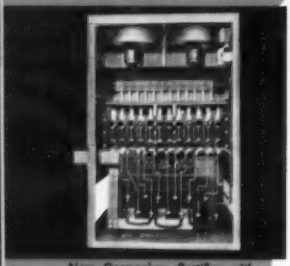
SINCE 1920

10 important ways to keep



New Germanium Rectifier with panel removed to show simplified construction.

Manual Tap Switch Control

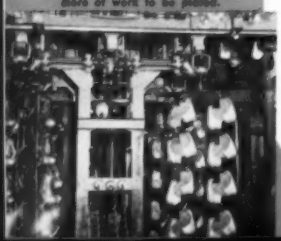
Motor Operated Tap Switch Control

Continuously Variable Auto-Transformer

Saturable Core Reactor

Operator is shown adjusting the Dial-A-Cycle mechanism that will determine the cycle for this rack of work.

Automatic loader-unloader has just removed two racks of plated bumper guards and loaded two more of work to be plated.



ELECTRICAL AND PROCESSING EQUIPMENT

GERMANIUM RECTIFIERS

H-VW-M Germanium Rectifiers, known for efficiency, operating economy, compactness and close voltage control, are available in 6 to 150 volt capacity, with current outputs from 500 to 10,000 amperes. Designed for 24-hour-a-day operation at full capacity, with outputs of 12 volts or more, they have efficiencies up to 92%. Exceptional efficiencies are attained at ¼ and ½ loads. Voltage regulation as low as 5% can be obtained from no load to full load on some models at voltage ratings of 20 volts and above. Available with various types of voltage controls, manual or automatic, in self-contained or remote-controlled models.

Also look into the revolutionary new low cost line of Powertron Germanium Rectifiers—an H-VW-M first—with exclusive new features. These include: no-fuse DC protection system, no paralleling of junctions, high efficiency and improved regulation of germanium, 44 control positions with range of 2 to 12 volts, and less than 5% ripple. Available in ratings of 750 amperes, 1500 amperes, and 3000 amperes. Something special in packaged units and you get all the advantages at a new low price. If one of these fits your plating requirements, then you've got a real bargain. Immediate delivery. Write for catalog.

RECTIFIER CONTROLS

H-VW-M offers a complete line of rectifier controls to provide for many control functions. Used with either selenium or germanium rectifiers, these controls, properly applied, permit the most efficient control possible. Such devices as manual and motor operated tap switch controls, continuously variable auto-transformers and saturable core reactors are used with or without supplemental controls to provide automatic voltage stabilization, automatic current stabilization as well as automatic programming. H-VW-M Bulletins ER-108 and ER-109 further explain economical H-VW-M Rectifiers and Controls. Write for it.

FULL AUTOMATIC CONVEYORS

For well over 30 years H-VW-M design engineers have worked continuously for improvements in the automatic conveyors for electroplating and allied operations in which H-VW-M pioneered.
Today's full-automatic conveyors are a far cry from the conveyors produced by H-VW-M as early as 1922. But one thing remains the same – and that is H-VW-M's desire to provide the most advanced and efficient equipment possible. Scores of innovations and improvements resulting from continuing H-VW-M research mean today's H-VW-M Full Automatic Conveyors offer the ultimate in service and efficiency for peak production of the highest quality at lowest cost.

DIAL-A-CYCLE CONTROL

Exemplifying the many H-VW-M developments contributing better, easier plating, is the remarkable new DIAL-A-CYCLE Control. This unique selective by-pass mechanism – of particular interest to aluminum anodizers – permits a whole series of different operations and cycles in one full automatic conveyor. Length of any treatment time can be varied, and, in anodizing, different colors can be anodized in one continuous operation, and in any sequence. It is a truly revolutionary device, resulting in remarkable labor savings and increased production.

AUTOMATIC LOAD-UNLOAD

Automatic Load and Unload is another recent development of H-VW-M that contributes to greater economies in the plating room. This new transfer unit, operating the same indexing sequence between plating conveyor and a monorail conveyor loads and unloads racks automatically. Manual handling is eliminated by this major advance towards automation in metal finishing.

This, of course, is just one of many types of conveying equipment offered to metal finishers. Return type conveyors, elevator conveyors, high-lift conveyors, straight line conveyors, and others – of every description are H-VW-M designed, manufactured and installed. If you'd like to know more about the cost-saving story of H-VW-M Full Automatic Conveyors, write for Bulletin FA-105.

metal finishing costs down

BUFFING AND CLEANING SUPPLIES

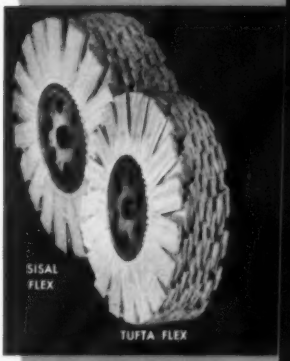
BUFFS

Tufta-Flex and Sisal-Flex Buffs

Speed and economy are embodied in two new H-VW-M Buffs for thorough cutting and coloring on contoured surfaces. For medium and heavy duty, SISAL-FLEX Buffs with sisal-cored tufts are available, and for light to medium duty, TUFTA-FLEX Buffs, having full cloth tufts, are offered.

Both buffs feature double-folded tufts for maximum cutting surface, and to retain compound on the leading edges and ends of the tufts. To prevent streaking, tufts are staggered in a double row around the buff. Cool running, a feature of both buffs, is the result of staggered tufts, plus a pattern of ventilating holes in the rugged steel center. Fraying, which is wasteful and expensive, is ruled out by the bias-cut construction of both cloth and sisal.

These time and cost-saving new buffs are available in standard diameters from 12 to 18 inches.



Plain Ruff-L-Buff (below) after wearing off 1 inch in test. Loose threads, numerous holes and breaks due to excessive heat and abrasion are apparent.

Binderized Ruff-L-Buff (below) after same test. Notice absence of thread or cloth breakage, convincing proof of Binderizing's effect on buff life.

BINDERIZED® RUFF-L-BUFFS

"BINDERIZED" Ruff-L-Buffs are pre-treated with a high quality compound binder. Because every fibre is impregnated with the same binder used in buffing compounds, Binderized Ruff-L-Buffs are ready for operation at top efficiency from the very first piece.

The cost-saving advantages of Binderized Ruff-L-Buffs are many. "Heading-up" is eliminated, thus break-in time is radically reduced. Because of the natural affinity between the Binderized Ruff-L-Buffs and the compound, the compound lasts far longer, and is easier to apply. Naturally, much better cut is obtained because of the high amount of compound carried.

Perhaps the greatest advantage of Binderized Ruff-L-Buffs is their internal lubrication which prevents wear inside the buff (see photos). Wear is even—and up to 30% longer. To learn more about the unusual economies of Binderized Ruff-L-Buffs, write for Bulletin No. B-103.

LIQUIMATIC COMPOUNDS

and application equipment

Buffs "live" up to 200% longer . . . No compound waste . . . Reduced labor costs . . . Fast cutting, easy cleaning—all these advantages and more are embodied in the unusual Liquimatic Liquid Compounds and application equipment.

Because of the enormous economies of using the Liquimatic System, the system soon pays for itself in buff, compound and labor savings.

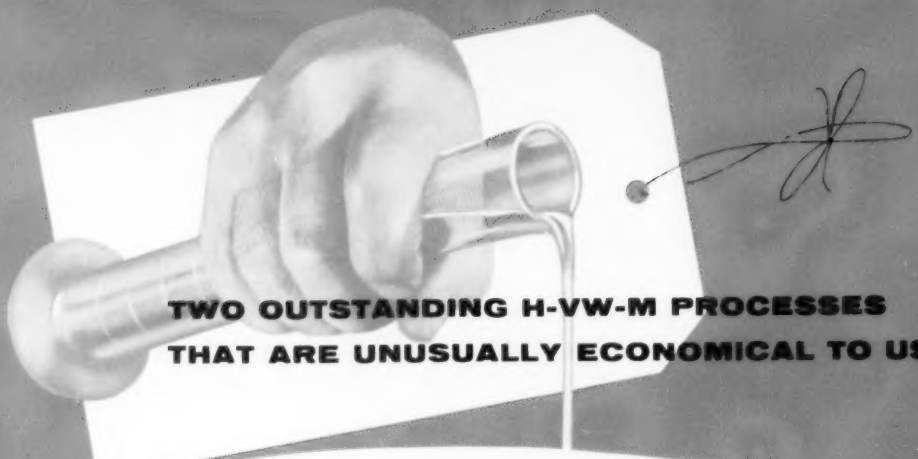
A complete line of Liquimatic Compounds is available for cutting and coloring ferrous and non-ferrous metals. These provide an adhesive, slow-wearing buff face, and have a high safety factor because of their high flash point. All are of sprayable viscosity, and have a long storage life. Write for H-VW-M Bulletin No. Co-103, which fully describes Liquimatic and other economical H-VW-M Compounds.

85-S ALUMINUM CLEANER

H-VW-M devotes constant research to the subject of cleaners and the result is a comprehensive line of Matawan Cleaners giving superior results in soak cleaning, power spray operations, oxide removal, and special cleaning and etching operations.

Of particular importance is H-VW-M's new 85-S Aluminum Cleaner, which offers interesting advantages to aluminum finishers. It prevents scale formation, for instance, thus keeping coil and tank walls scale free, and it leaves an extremely bright surface. Its built-in regenerator makes maximum effective use of caustic in the bath.

H-VW-M Bulletin C-108 tells about this unusual cleaner, and other Matawan Cleaners offering unusual money-saving advantages.



TWO OUTSTANDING H-VW-M PROCESSES THAT ARE UNUSUALLY ECONOMICAL TO USE

LEVELUME

H-VW-M's new LEVELUME represents a milestone in nickel plating processes. It is the first bright nickel process to combine qualities of full brightness, high leveling and exceptional speed. In high-production installations, deposition rates with LEVELUME are 100% higher than those obtained with any other process, but will require some air agitation equipment.

Conversion to Levelume is simple, involving no new investment in conveyors, or tanks.

Key to the new process are its addition agents. With them an activated carbon pack can be used in the plating solution filter. This constantly removes harmful organic contamiments, preserving the purity of the bath, and consequently contributing to the economy of the process.

A few of the additional benefits include high surface activity, good ductility, controlled stress, and the feasibility of double coatings. A full description of the process—one in the family of NICKELUME processes—is available in the Levelume Manual, which is available on request.

CADALUME

H-VW-M's New Cadalume Process has all of the extras that you have been looking for in cadmium plating. It is the newest and best answer because it does the job faster and better. The new improved Cadalume Process of H-VW-M *lets you get at least 80,000 ampere hours for every gallon of brightener consumed. And bright dipping is eliminated for most applications!* The secret? It's simply this: You use two different Cadalume Brighteners. One is the Cadalume Make-Up Brightener and you use it only when you make up a new bath or convert an existing one. The other —Cadalume Brightener—is the strong addition agent used for all maintenance.

Here's why Cadalume keeps your costs low: The bright range is increased up to 10% . . . you get very high plating speeds—up to 10% increase . . . 4 times longer bath life . . . better distribution . . . and the brightener is more stable—it won't plate out. This simple, easy-to-operate economy is something for you to see. Ask for the New Cadalume Technical Manual.

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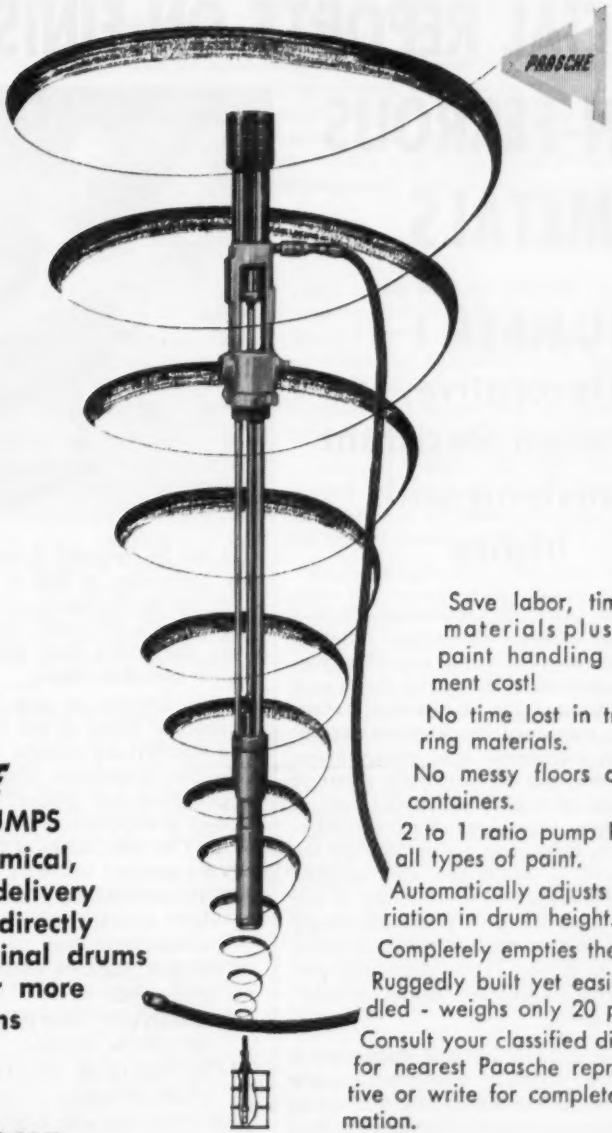

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SPECIAL REPORTS ON FINISHING NON-FERROUS METALS

NUMBER I—
Decorative, Corrosion-Resistant Finishing with Iridite

Chromate conversion coatings are well known and accepted throughout industry as an economical means of providing corrosion protection, a decorative finish or a good paint base for non-ferrous metals. However, continued developments are so rapid and widespread that many manufacturers may not be completely aware of the breadth of application of this type of finish. Hence, this digest of current information; to bring you up to date on the many ways in which you can combine salable appearance with durability in one finish at a competitive price advantage. Report II on paint base, corrosion-resistant finishes and Report III on chemically polished, corrosion-resistant finishes are available on request.

First, as a basis for this discussion, a "decorative" finish is considered as any chromate film that is used as a final finish in itself. It may be truly decorative in that its sole purpose is to enhance the beauty of the product. For example, a bright chrome-like finish or a pleasing bronze appearance are among the many effects that can be obtained. It may be functionally decorative in that it reduces reflectivity for camouflage purposes or provides a means of color-coding parts. But, in all cases, the Iridite films protect the metal against corrosive attack.

Iridite finishes are now available for all commercial forms of the more commonly used non-ferrous metals, including zinc, cadmium, aluminum, magnesium, silver, copper, brass and bronze. These films can produce a wide variety of pleasing appearances. The basic colors of the Iridite coatings are grouped below by metals.

ZINC and CADMIUM: Metallic bright, light iridescent, iridescent yellow, bronze, olive drab.

COPPER, BRASS, BRONZE: Metallic bright, yellow.

ALUMINUM ALLOYS: Clear, iridescent yellow, brown.

MAGNESIUM ALLOYS: Metallic bright, iridescent yellow-red, brown.

SILVER: Metallic bright.

In addition, many films can be modified by bleaching or by dyeing. Among the dye colors available are various shades of red, yellow, green, blue or black.

WHAT IS IRIDITE®?

Briefly, Iridite is the tradename for a specialized line of chromate conversion finishes. They are generally applied by dip, some by brush or spray, at or near room temperature, with automatic equipment or manual finishing facilities. During application, a chemical reaction occurs that produces a thin (.00002″ max.) gel-like, complex chromate film of a non-porous nature on the surface of the metal. This film is an integral part of the metal itself, thus cannot flake, chip or peel. No special equipment, exhaust systems or specially trained personnel are required.

Depending upon the metal and the Iridite used, corrosion resistance of clear and bright films ranges from mild passivity to as high as 500 hours in salt-spray; on heavier dark films, salt-spray resistance ranges from approx. 100 to 1000 hours.

It is this combination of decorative and corrosion resistant properties that accounts for the widening use of Iridite finishes.

For example, Iridites #4-73 and #4-75 (Cast-Zinc-Brite) make possible for the first time, a combination of lustrous chemical polishing of the as-cast surface of zinc die castings and good resistance to corrosion. Further, in many cases, sizeable savings in the cost of buffing and electroplating are realized.

On many steel parts, a simple system of zinc or cadmium plate and bright Iridite is used instead of more costly electroplated finishes to provide a bright, decorative and protective finish with tremendous savings in material, equipment and labor.

In finishing aluminum, where corrosion resistance or paint adherence is the prime consideration, the aircraft industry has all but abandoned the anodizing process in favor of recently developed chromate conversion coatings, among them Iridite #14 and #14-2 (Al-Coat). These formulations and their method of application can be varied to retain the original metallic appearance while providing acceptable corrosion resistance, or to produce a fully colored brown finish that offers exceptional corrosion protection. Again, time and manpower savings are astounding—one company saved at least $15,000 a year on maintenance of racks alone and another $40,000 on materials and labor in only nine months. In addition, of course, hundreds of thousands of dollars are saved by eliminating the need for expenditures for generators, heating equipment and racks.

Iridites are widely approved under both Armed Services and industrial specifications because of performance, low cost and savings of materials and equipment.

In planning or designing, you should consider the many other characteristics of Iridite finishes which may enter into the specific problem. In addition to having decorative and protective functions, these chromate coatings form an excellent base for organic finishes and bonding compounds. They have low electrical resistance. Some can be soldered and welded. The film itself does not affect the dimensional stability of close tolerance parts.

You can see then, that with the many factors to be considered, selection of the Iridite best suited to your product requires the services of a specialist. That's why Allied maintains a staff of competent Field Engineers—to help you select the Iridite to make your installation most efficient in improving the quality of your product. You'll find your Allied Field Engineer listed under "Plating Supplies" in your classified telephone book. Or, write direct and tell us your problem. Complete literature and data, as well as sample part processing, is available. Allied Research Products, Inc., 4004-06 E. Monument Street, Baltimore 5, Maryland.

For more data circle **343** on Reader Service Card

ADV

Practical Applications of Modern Products

Electrostatic Spray Speeds Finishing Operation

Last year, a manufacturer of gas- and oil-heating and air-conditioning equipment, Waterman-Waterbury Company, Minneapolis, converted its painting installation to electrostatic spray. One example of why the company is enthusiastic about the results is the increase in conveyor speed that the installation has made possible: from seven to 11½ f.p.m. "With ever-rising manufacturing costs," a company official commented, "the savings effected by our modernization program have enabled us to keep a more competitive position."

The change-over to electrostatic spray was made during the company's busiest season without interrupting production. On Tuesday, workmen began to install a new 60-foot conveyor loop and the Ransburg No. 2 electrostatic equipment. The following Saturday, test panels were painted. Five days later the new line was in full production.

Approximately 30 painted parts go into one furnace. They are painted in three colors: white and two shades of green. Most attention is given to getting a uniform, high-quality finish on the outside of the furnace panels.

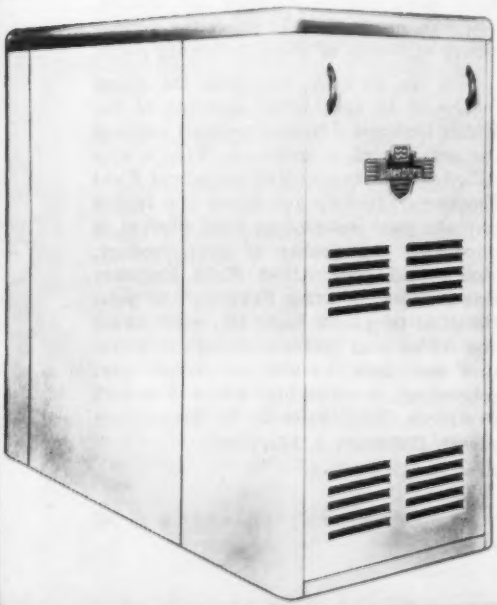


Fig. 1—La Boy model, Series 6000, is typical of the Waterman-Waterbury line of furnaces.

How Parts Are Hung on Conveyor

An important part of this finishing

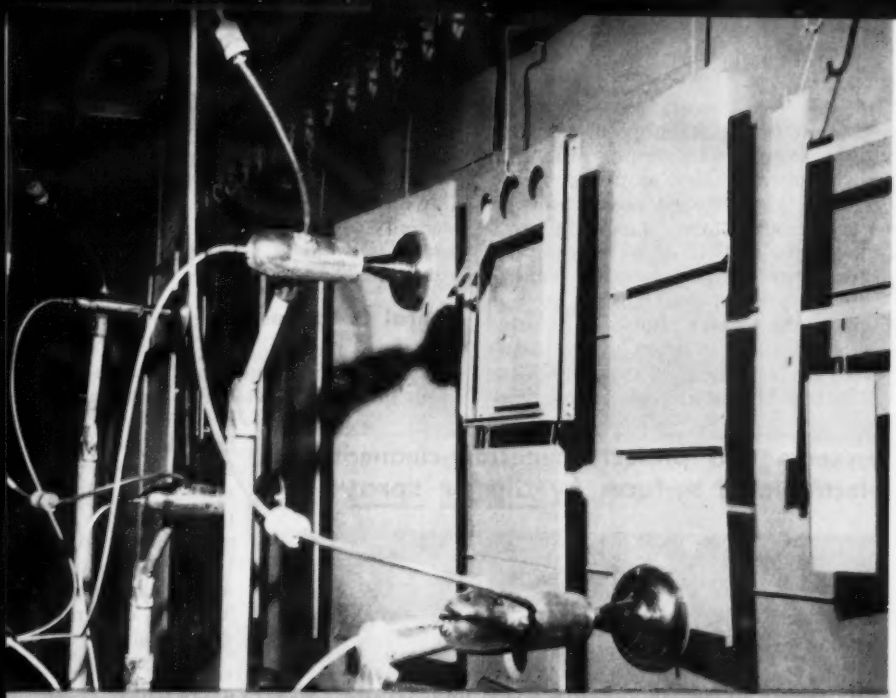
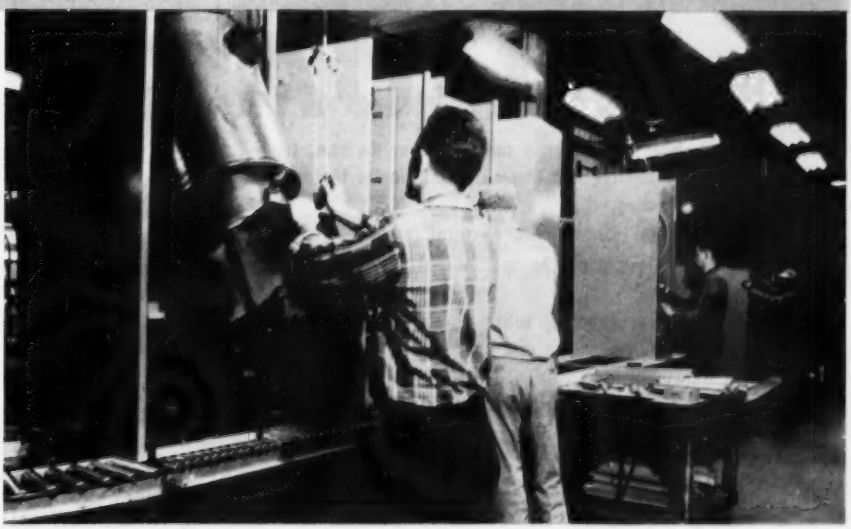


Fig. 2—Panels for furnaces move through Ransburg No. 2 electrostatic spray booth. Furnace parts and "fillers" are painted in proper sequence to simplify final assembly.

Fig. 3—Seventy minutes after parts for furnace are hung on the conveyor, gas or oil furnace rolls off the assembly line. (Photos courtesy Ransburg Electro-Coating Corporation.)



operation is the hanging of parts in proper sequence to simplify the next step in assembly and shipping. Workers hang the furnace panels and irregular inside "filler" pieces in proper sequence so that parts for complete units arrive at the assembly point.

Three types of workholders are employed. Secondary hooks are used where possible to work in as many pieces as possible in a single painting operation. Hooks are placed at eight-inch centers on the conveyor. Panels up to 65 inches in height are hung vertically on the line, while the largest, 96 inches in height, are run horizontally. The longest run for one model is about 11 hours and the shortest run about four hours.

Metal Preparation

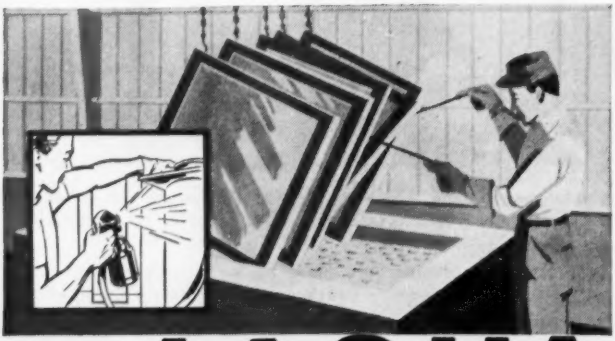
Before painting, the heating and air-conditioning equipment parts are sent through a five-stage metal-preparation cycle: 1) hot alkaline wash; 2) hot water rinse; 3) phosphatizing in hot phosphate solution; 4) cold water rinse; and 5) warm chromic-acid wash.

Painting

Parts on the conveyor first travel through a spray booth, where hand sprayers touch up recessed areas because these areas are difficult to coat properly with electrostatic spray.

From the hand-spray booth, work moves into the electrostatic spray booth, where four eight-inch atoming bells on one side of the line and two on the other side apply a light protective coating on the back side of the panels and parts and an 0.8-mil

preserve and protect chemically-cleaned and electroplated surfaces by dip or spray



WITH LAQUA

- **LAQUA** displaces water from a surface and at the same time deposits a thin protective film thereon. It eliminates the drying operation after plating.
- **LAQUA** does not interfere with electrical contacts.
- **LAQUA**-coated metals can be spot welded . . . it improves soldering operations.
- **LAQUA** prevents oxidation, sulfer discoloration and finger-printing of parts during storing and handling.
- **LAQUA** resists salt spray and humidity.
- **LAQUA** can be recoated with almost all finishes.

Write for Free Sample and Complete Catalog.

FIDELITY CHEMICAL PRODUCTS CORP.

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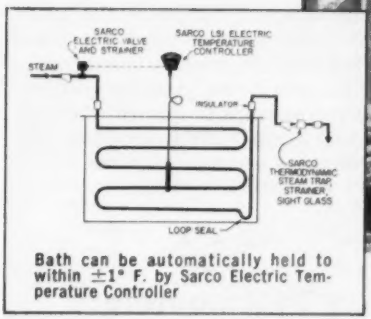
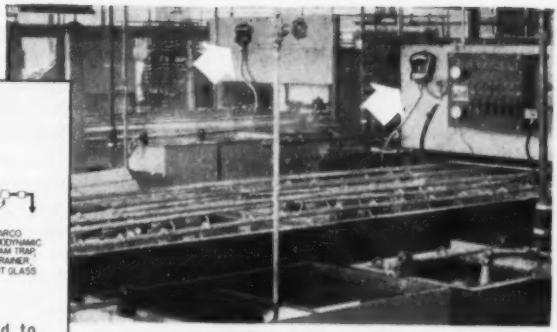
For more data circle **344** on Reader Service Card



Bath can be automatically held to within ±1° F. by Sarco Electric Temperature Controller



Plant of Regal Plating Co., Inc., Providence, R. I. where 32 electroplating tanks are equipped with Sarco LSI Electric Indicating Temperature Controllers.

How low-cost Temperature Control ended "blue haze," pitting, burning

Regal Plating Co. now gets high quality plating with minimum of rejects

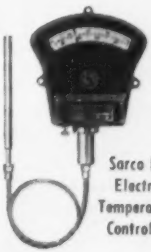
This well-known job plater specializes in high quality plating of costume jewelry and fishing lures. During an expansion program management ordered the elimination of these common plating difficulties: blue haze on nickel plate, pitting of copper plate and burning of sharp points.

These troubles were due to creeping bath temperatures . . . the result of *manual* temperature control, which is always unreliable.

To solve these problems and step up efficiency, Regal installed Sarco LSI Electric Indicating Temperature Controllers on all 32 plating tanks. Result: above troubles completely eliminated, rejects greatly reduced, no more burnishing of nickel plate.

Investigate the advantages of Sarco Temperature Controllers. Write for Handbook No. 6 or consult your Plating Supplies Jobber. Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

SARCO *improves product quality and output*



Sarco LSI Electric Temperature Controller

A COMPLETE SYSTEM FOR AS LITTLE AS $130 A TANK!

Accurate to ± 1° F. Simple. Dependable. Easily installed.

Easy-to-read controller dial indicates temperature being maintained. Temperature setting quickly changed by turning one knob.

2159-B

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coating on the front side, where appearance is important.

After painting, the parts move along to an overhead, U-shaped, gas-fired oven, where they are baked at 240 deg. F. for 20 minutes.

The conveyor is about 750 feet in length, and only 70 minutes elapse from the time pieces are hung on the line until they are completely painted, baked, assembled and crated.

For more data circle **1** on Reader Service Card

★ ★ ★

Martin Sprays Bombers with Hot-Paint Airless Spray

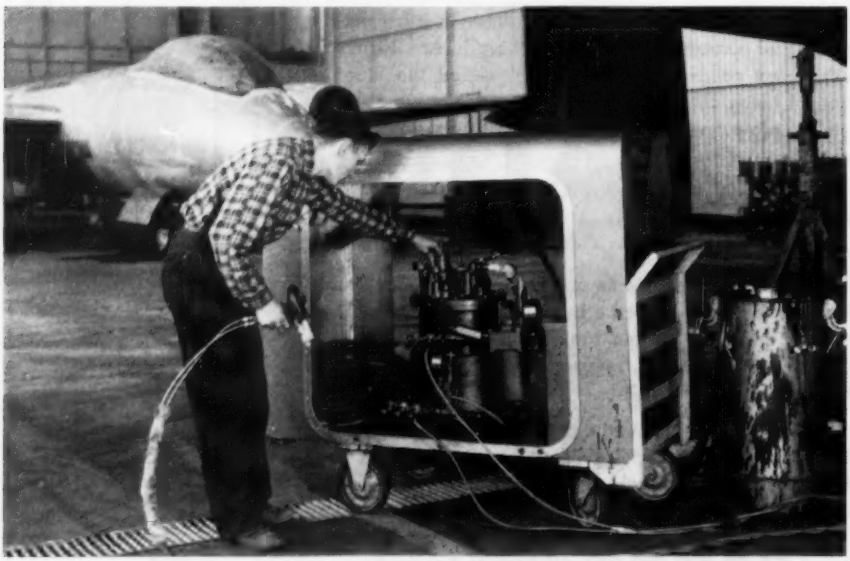
Glenn L. Martin Company paints USAF B-57 jet bombers faster by using a hot-paint airless spray unit. Paint is drawn from a standard tank, heated to 165 deg. F., and hydraulically pressurized to 600 p.s.i. The solvents, under heat and pressure, atomize the paint at the spray nozzle, applying more paint solids to the surface being sprayed than would be possible without heat. Process helps to ensure a smooth high-gloss finish. Only two coatings instead of three are now required.

For more data circle **2** on Reader Service Card

★ ★ ★

Oven Thermometers Finished with Silicone-Based Paint

Silicone-based paint formulated by The Stanley Chemical Company, a subsidiary of The Stanley Works, East Berlin, Conn., is being used to finish Taylor Oven Thermometers.



Hot spray painting apparatus used for painting jet bombers. Paint is hydraulically pressurized to 600 p.s.i. (Photograph courtesy Glenn L. Martin Company, Baltimore, Md.)

KADMOID* eliminates $2,298,000 warehouse at Goodyear Rim Plant

Thanks to the established protective quality of the Kadmoid finish used on these tire rims, the Metal Products Division, of The Goodyear Tire and Rubber Company, Inc., Akron, stores acres of rims under acres of sky . . . in all kinds of weather. No costly building is needed to guard this vast warehousing area against snow, sleet, rain or sun.

Another vitally important point . . . field records prove that the Kadmoid baking finish far out-performs the zinc plating previously used, keeps Goodyear rims the world over looking better, longer . . . and at far less cost.

Such unusual savings are typical with Kadmoid . . . because Kadmoid is extremely tough and durable, and offers peak resistance to salt and other chemicals. It's ideal for use where maximum protection is essential.

May we tell you more?

*Kadmoid is the finish Goodyear advertises as Bond-a-Coat.

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We engineer [illegible] finishing problems

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The coating is applied directly to the sheet metal stock, without priming or bonding coats.

Three colors are being used on each thermometer: beige for the sand blasted steel cans; green for the alkaline-etched aluminum dial, and red for the bright-dipped brass pointer. The steel is cured for one hour at 450 deg. F. and the aluminum and brass for 30 minutes at the same temperature. The parts are then sheared, blanked, perforated and formed.

For more data circle **3** on Reader Service Card

★ ★ ★

Producing Porcelain-Enameled Signs

By **ARTHUR Q. SMITH**
American Gas Association
New York, N. Y.

The use of porcelain - enameled signs and structural material is so wide-

Taylor Oven Thermometer: silicone finish

INCREASE PAINT SPRAY BOOTH EFFICIENCY
....AND SAVE TIME, FLOOR-SPACE, MONEY!

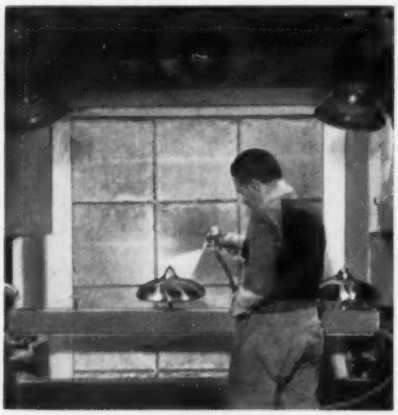

Photo Courtesy Argo Lamp Co., Philadelphia, Pa.

...With R P Paint Arrestors

The Argo Lamp Co. found RP Paint Arrestors more efficient, more economical in arresting paint overspray than the more elaborate and expensive system previously used. Investigate the many advantages of these inexpensive, replaceable pads to increase booth efficiency, reduce floor-space requirements and maintenance costs.

WRITE TODAY

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Dept. 38, Madison 10, Wisconsin

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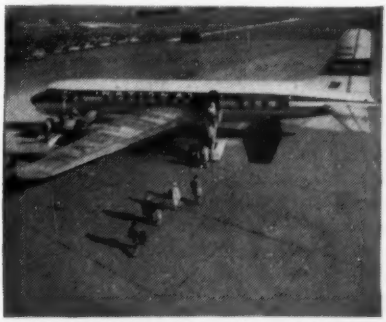
ACP Alodine® ANCHORS THE FINISH,

PERMITS FORMING AFTER PAINTING

Users of strip aluminum find that ACP Alodine anchors the finish so firmly to the metal that it can be roll formed after painting without damaging the finish. The chemical coating formed by this ACP product becomes an integral part of the metal, bars corrosion, adds years to the life of the metal. It offers a two-fold economy—it is inexpensive and it permits scratches in the coating to be quickly and easily repaired.



BOTH COMMERCIAL AND MILITARY AIRCRAFT are treated with ACP Alodine to protect the metal and improve paint adhesion. Quality and economy are two important reasons.

In the processing of aluminum strip for awnings, the Alodine process has cut operating costs as much as 33%, increased production as much as 50%.

LEARN MORE ABOUT ACP ALODINE. Bulletin 1424 describes the various types of ACP Alodine and gives information which will help you select the proper one for your particular application. Write for your copy today.

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

DETROIT, MICH. • ST. JOSEPH, MO. • NILES, CALIF. • WINDSOR, ONT.

CHEMICALS ACP PROCESSES

New Chemical Horizons for Industry and Agriculture

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spread that plants to produce these products are scattered throughout the country. They are usually located in the center of their marketing area and make signs for firms doing business in that general area.

One such plant is the Southwestern Porcelain Steel Corp., Sand Springs, Oklahoma. Situated on the outskirts of Tulsa, this organization manufactures porcelain enamel signs for a variety of companies, some of which have national distribution for their products.

In a modern plant with facilities to produce from the smallest to the largest sign, the company can do the complete job from original design and sheet stock forming to finishing the product. Some of these up-to-date facilities include a special section in the plant to grind frit for the application of colors which accurately duplicate customers' specifications.

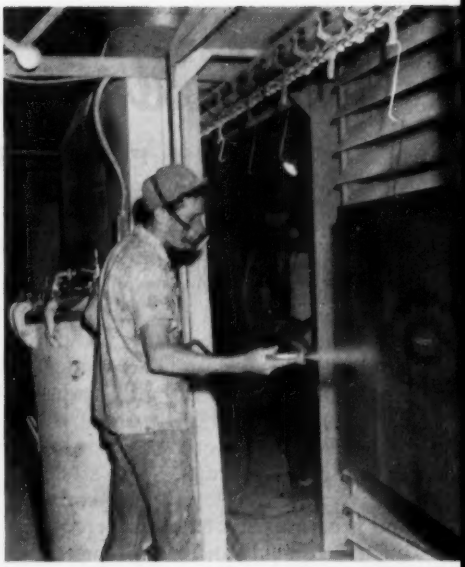

Fig. 1—Spraying ground coat for porcelain enamel on a sign panel at Southwestern Porcelain Steel Corp., Sand Springs, Oklahoma.

The principal operation, which is the basis of all porcelain enameling, is the precision firing of the enamel on the signs to produce a lasting, weatherproof and attractive finish. This is done in high-speed gas-fired furnaces under complete automatic temperature control, with approved safety equipment. **After the sheet metal** has been cut and formed for a particular sign job, it goes through pickling solutions to prepare the surface for a ground coat and the successive color coats. A ground coat is sprayed on (Fig. 1) and dried in a gas-fired oven at from 250 to 300 deg. F. Production procedure varies according to the design and the number of colors that must be applied. Each color is applied separately and dried between each application. Due to certain color combinations, it is sometimes

WHY

DO YOU ALLOW RAPID WEAR ON YOUR BUFFING FIXTURES

when they can be *FUSECOATED* to last up to a year or more? We specialize in protective coatings for fixtures of all kinds and would like to add your name to our long list of regular customers.

Write

for our general information folder or send sample fixture or drawing of same to be FUSECOATED.

Fusion Metal Coating Co.
25493 West 8 Mile Road
Detroit 19, Mich.

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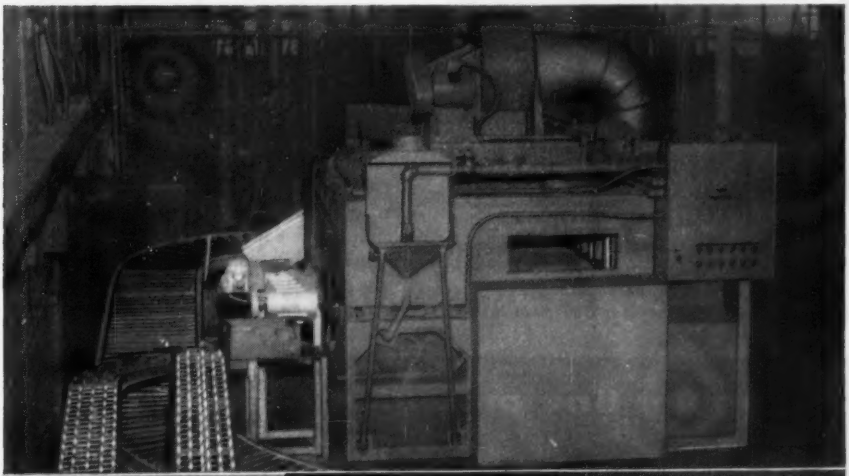
A SINGLE MACHINE does TRIPLE job!

Ransohoff COMBINATION DRUM & CONVEYOR TYPE WASH, RINSE & DRY MACHINE . . .



1 Cleans small parts in drum section

2 Cleans tote pans in conveyor section

3 Cleans large or fragile parts in conveyor section

Versatile . . . Ransohoff-design . . . important savings in initial cost, space, time and labor, plus increased production!

Ransohoff Combination Drum & Conveyor Type Cleaning Machine—side-by-side—gives the widest possible use and most efficient cleaning, at the lowest cost. You save on first cost, on installation, on operation and on maintenance!

One operator loads small parts in drum section and tote pans, large or fragile parts in conveyor section. After thorough washing, rinsing and drying, parts and tote pans are returned to operator at loading end.

Ransohoff engineers will gladly survey your cleaning requirements, suggest production-proved methods to cut costs and improve results in your plant.

For complete details, write: Ransohoff, Inc., 610 North Fifth St., Hamilton, Ohio.

See it at: BOOTH 437 WESTERN METAL SHOW, LOS ANGELES, CALIF. MARCH 25-29

Ransohoff *The oldest name... the newest ideas*

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Fig. 2—Porcelain enamel sign sections going into large conveyor type muffle furnace to have finish coat fired at 1500 deg. F. (Photographs courtesy American Gas Association.)

necessary to fire each color separately.

For this high-temperature firing there are three gas-fired furnaces. One is a radiant tube continuous conveyor-type furnace which is usually operated in the temperature range of 1,480 to 1,500 deg. F. This furnace is used for smaller pieces.

There are two large muffle furnaces, one a box-type 5 by 12 by 5½ feet, and another which is conveyorized (Fig. 2), 5½ by 13½ by 7 feet. Both utilize North American burners on pre-mixed gas. The box furnace is operated at 1,480 deg. F. and the conveyor furnace at 1,500 deg. F.

Because of the high capacity and accurate temperature control of these furnaces, the ground coat can be fired in eight minutes, a silk screen design in five minutes. Now and then when the last color covers a small area or just

Another fine product made finer . . .
with the PARAMOUNT "Finishing Touch"
"Fine finishes are essential to the sales success of our products," says L. E. Mason Co., leading manufacturer of quality gifts. "To highlight the copper plated and oxidized finish of the coasters, we depend on Paramount Felt Bobs. We get the precise color we want with no 'ragged highlighted ends' and without destroying contrast between the oxidized backgrounds and highlights. Your bobs give good cut, good life while producing the fine finishes we demand."
Wherever fine finishes count, successful firms use Paramount Wheels and Bobs. Join the leaders — specify Paramount. Call your supply house.
Paramount
Felt Wheels, Bobs, Sheet Felt
Bacon Felt Co.
447 West Water St., Taunton, Mass.
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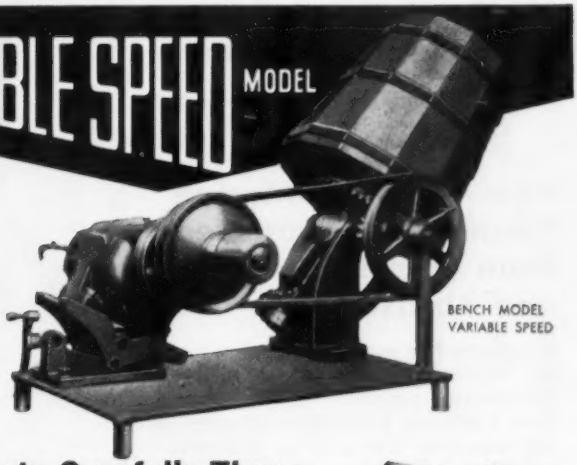
INVESTIGATE THIS TIME-SAVING

VARIABLE SPEED MODEL



BENCH MODEL
VARIABLE SPEED

Bench-Type Single Speed

No. 5—Single Speed

No. 5—Variable Speed

No. 5A—Single Speed

No. 5A—Variable Speed

No. 6—Single Speed

No. 6—Variable Speed

Note Carefully These IMPORTANT POINTS

Barrels can be filled with parts or abrasive — *while running.*

Work can be watched — samples removed for inspection — *while running.*

Angle can be changed for best abrasive or polishing action — *while running.*

Barrels can be emptied by tilting to pouring position — *while running.*

Barrels are made in various sizes, shapes, and materials. They are easily replaced.

If You're a Tumbler, Send for This NEW CATALOG

THE HENDERSON BROS. COMPANY

"The Tumbling Barrel People"

134 SOUTH LEONARD STREET
WATERBURY, CONNECTICUT

SINCE 1880 DESIGNERS AND BUILDERS OF TUMBLING BARREL EQUIPMENT

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a spot here and there, three and one-half minutes will fuse the frit into the hard finish desired.

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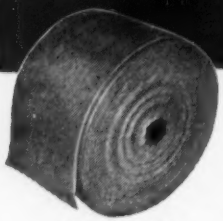
★ ★ ★

How "Nomar" Marine Products are Protected from Corrosion and Abrasion

Products for marine service made by Whitman & Robinson, a metal fabricating company of Weedsport, New York, are protected with primers and plastisols provided by The Stanley Chemical Company, a subsidiary of The Stanley Works, East Berlin, Conn. Sold under the trade name

Nomar Marine Anchor: primer plus plastisol provides corrosion-preventive coating

For Dust Free Finishes!
BOND TACK CLOTH



IN ROLLS
Cut off any size piece to use as needed.

IN BULK
Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold

In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.

"The Tacky Wiper Specialists"

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

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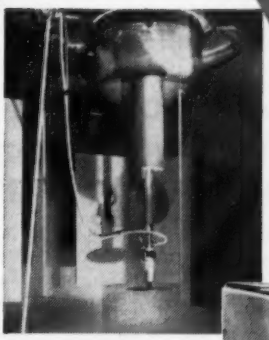
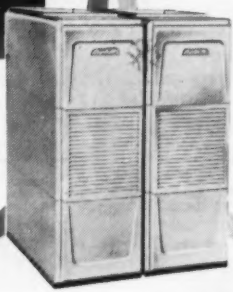
NO REASON WHY YOU CAN'T DO IT, TOO!



Typical of the Mueller Climatrol line is this summer air conditioner and gas-fired winter air conditioner, now uniformly painted electrostatically with RANSBURG NO. 2 PROCESS



MUELLER CLIMATROL,

Milwaukee, increases paint mileage 40% with

RANSBURG NO. 2 PROCESS

And, 10 men averaging 40 hours a week now do the work formerly handled by 24 men averaging 50 hours!

Painting used to be a bottleneck in the manufacture of heating and air conditioning equipment at Mueller Climatrol.

But not any more!

When Mueller modernized its finishing department—replacing hand spray with Ransburg No. 2 Process Electro-Spray—daily production was increased . . . finishing costs were cut . . . and quality of the work was improved.

Annually, Mueller coats over 10 million square feet of sheet metal, so a 40% increase in paint mileage—translated into paint dollars saved—is a sizeable figure. Pointing up other savings, a typical run of 400 furnace casings used to take 200 man hours to clean and hand spray. Mueller does it now in 60 hours!

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product, if your production justifies conveyorized painting, chances are one of the Ransburg Electro-Coating Processes can do it better, for less, with improved uniformity and quality of the work. Write for our new brochure which includes numerous examples of both large and small manufacturers of a variety of products who are enjoying the many advantages of *Ransburg Electrostatic Spray Painting.*

Ransburg ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

For more data circle **354** on Reader Service Card

Practical Applications . . .

"Nomar," the company's products include anchors, boat hooks, gasoline tank holders and battery boxes.

"Nomar" anchors are made in five-, 10- and 15-pound weights to handle anything from a rowboat to a 22-foot cruiser. They must not mar the highly finished decks of boats, slip on decks when boats are turned sharply or pick up motor vibrations. They must also withstand the abuse of anchoring heavy boats in rocky and sandy bottoms and of course they should not be affected by the corrosive action of salt water.

Whitman and Robinson experimented and selected a coating system to meet these service conditions; namely, an application of Stanley 72R-426A primer, which contains zinc chromate for added protection against corrosion, and a coat of Stanley 77X-1078 orange plastisol. The high surface-slip characteristic of the plastisol gives a coated anchor the added advantage of washing clean when it is pulled up from a muddy bottom. Impervious to salt and oxygen deterioration, the plastisol coating resists chipping and wearing off from abrasion.

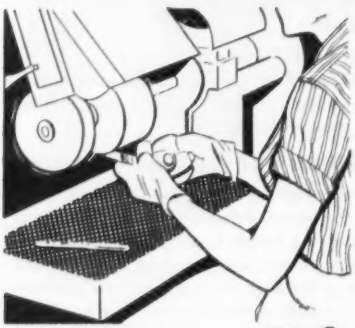
For more data circle **5** on Reader Service Card

★ ★ ★

Infrared Oven Used to Bake Paint on Large Capacitor Housings

Paint is now being baked on large 12-foot-high capacitor housings in General Electric's Hudson Falls, New York, plant, by conveying the housings through infrared ovens. The ovens, approximately 15 feet long and 17 feet high, are designed to utilize banks of General Electric infrared

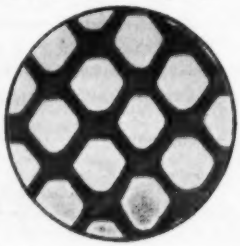
PROTECT FINE PLATED SURFACES



with **RP** *Neotex*

Neotex . . . the open pattern Neoprene rubber matting, protects highly polished finishes when used to line any surface where goods are worked on or in transit. In roll form, Neotex can be easily cut to any size or shape . . . it's rugged and long lasting, resistant to abrasives, caustics, heat, acids, oils, oxidation. Open pattern permits buffing compounds to settle. Available in a fine or coarse pattern. Write for complete information.

RP *Neotex*



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- LOW COMPOUND CONSUMPTION
- FEWER SECTIONS NEEDED
- GIVES LONGER LIFE

The buff you select is all important—it will mean longer buff life and greater production from a buff wheel.

Specify and buy the proven Schaffner Metal Center Air Cooled bias (type) Buff, and don't be satisfied with imitations. You'll find Schaffner buffs last longer, consume less compound and reduce rejections.

Write us. We'll run a test for you in your own plant and prove our claims.

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Paul — Bob — Gus

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* CROCUS COMPOUND * STAINLESS STEEL COMPOUNDS * ALUMINUM BUFFING COMPOUNDS
* ALL-PURPOSE BUFFING COMPOUNDS * WHITE COLORING COMPOUNDS * NICKEL BUFFING (LIME) * EMERY CAKE * PLASTIC BUFFING COMPOUNDS * TALLOW GREASE STICK
* PUMICE GREASE STOCK * POLISHING WHEEL CEMENT * STEEL POLISHING COMPOUNDS

COMPOUNDS MADE IN BAR, SPRAY OR PASTE

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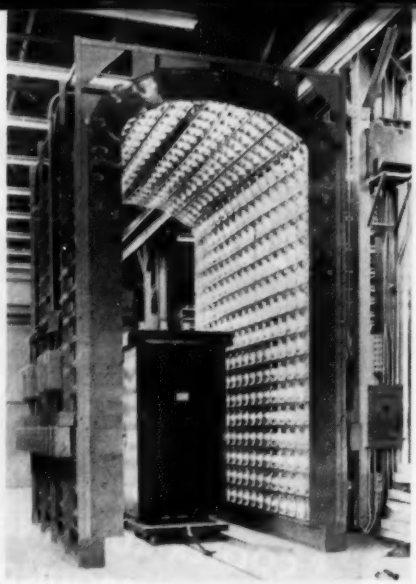
lamps developing a temperature of 300 deg. F. for the 30-minute bake.

Fostoria Pressed Steel Corporation engineers, cooperating with General Electric industrial heating specialists, developed and constructed the big infrared oven to General Electric specifications. Requirements called for a radiant oven which would not only accommodate the largest housings, but also would bake smaller, six-foot-high housings with equal efficiency. To give this versatility, the Fostoria oven is divided into several circuits, so that parts of the oven may be turned off when smaller sizes are being baked.

The capacitor housings, used for outdoor switching stations and substations, are pulled through the oven at speeds varying from six to 12 inches per minute, by means of a floor-type conveyor. Paint used is a Glyptal*

*Registered trade-mark of General Electric Company.



Large infrared oven is used to bake capacitor housings at General Electric. Floor conconveyor is used to pull housings through the oven. (Photograph courtesy Fostoria Pressed Steel Corporation, Fostoria, Ohio.)

For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, Calif.*
Standard of the Finishing Industry Since 1934
For more data circle **357** on Reader Service Card

type, formulated to withstand severe weather conditions.

While the General Electric paint specifications require a half-hour, 300-degree bake for average finishes, General Electric infrared lamps of varied wattage are positioned to make it possible to achieve the precise temperatures desired for units of different sizes. The new oven is equipped with a ventilating system as well as safety interlocks which control and prepurge the oven atmosphere before the current is turned on.

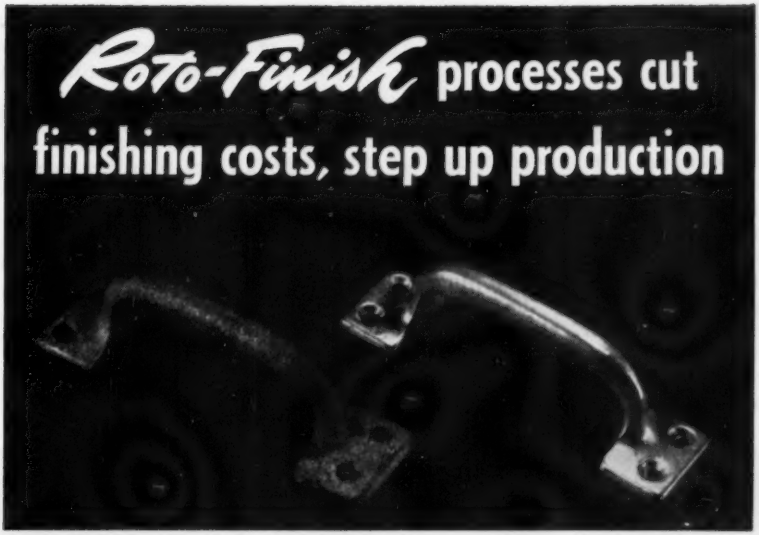
For more data circle **6** on Reader Service Card

★ ★ ★

Large Compressor Casting Part Washed Automatically

The problem of washing and completely removing metal chips from

Roto-Finish processes cut finishing costs, step up production



Savings on deburring, descaling, grinding, polishing, coloring and surface improvement by Roto-Finish barrel finishing processes are tremendous. Expensive hand finishing methods can be eliminated.

Roto-Finish Chips, Compounds and Machines are of the highest quality—Roto-Finish has never sacrificed quality for the sake of price. A continuous program of improvement of processes and products gives you better performance.

Roto-Finish guarantees results—There is no costly trial and error involved in the purchase of Roto-Finish equipment. You submit unfinished parts to Roto-Finish along with a finished sample and a description of the finish you require. These sample parts are processed by Roto-Finish to determine the right process to do the job. Roto-Finish guarantees to reproduce the same results in your plant, using Roto-Finish processes, that are achieved in sample processing.

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Phone FI 3-5578

For more data circle 358 on Reader Service Card

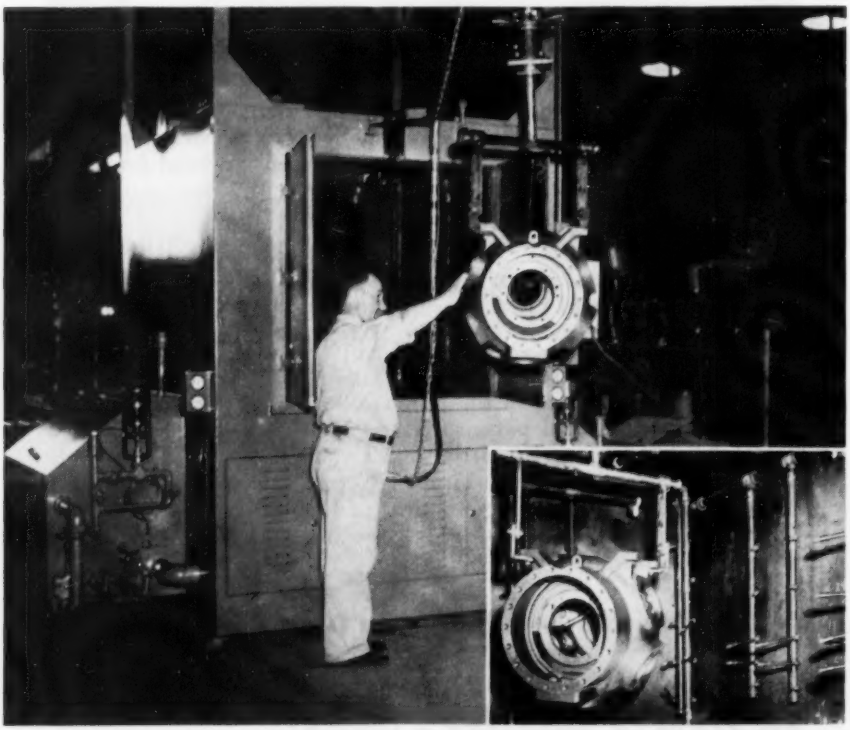
Practical Applications . . .

compressor castings has been solved by the installation of a new Industrial Washing Machine at the La Crosse, Wisconsin, plant of The Trane Company, manufacturer of air conditioning, ventilating and heat transfer equipment. The machine, designed and built by Industrial Washing Machine Corp., Matawan, New Jersey, processes ten compressor castings an hour.

The difficulties involved in thoroughly removing chips from the inner recesses and tapped holes of the machined parts have been eliminated by means of a rotating fixture which holds the compressor casting suspended in a special manner within the spray chamber. In operation, powerful sprays of hot detergent solution play upon the rotating compressor casting from the sides, top and bottom, removing oil, metal chips and dirt, followed by a rinsing spray, a rust-preventive coating, then a steam bath at 300 deg. F. to dry the coating.

The machine is 10 feet long, six feet wide and 11 feet high. Designated as Model CAB-42 x 42-WR-STM, the washer is heated by steam.

For more data circle **7** on Reader Service Card



Large compressor casting emerging from a washing machine especially designed to clean and dry the casting. Inset shows how casting is suspended in washing machine so that sprays clean inner recesses. (Photo courtesy the Industrial Washing Machine Corporation.)

More complete corrosion of anodes by using the HARSHAW ANOCAP

The Harshaw Anocap is a rubber electrode assembly protector. Easily slipped over the anode hook and down over the anode top, the Anocap enables you to corrode an additional 2 to 4 pounds of metal from each anode.

Many more time and money-saving benefits are yours in the inexpensive Harshaw Anocap:

1. More usable metal—less recasting or scrap loss.
2. Shorter stub—easily placed directly into anode saver basket and consumed.
3. Anode hook protected, thus giving it longer life.
4. With Anocap in place on hook, anode can easily be screwed on or removed from hook.
5. Anocap pays for itself during first use.
6. Entire anode can be below solution level. Shorter anodes can be used and thus a larger quantity of anodes can be obtained from any given poundage of anode metal.
7. When using Anocaps, solution level of bath is not critical.
8. Anodes can be used with any standard oval anode.

You'll make new savings on anodes tomorrow if you order Harshaw Anocaps today. Send or call in your order to the nearest Harshaw sales office.

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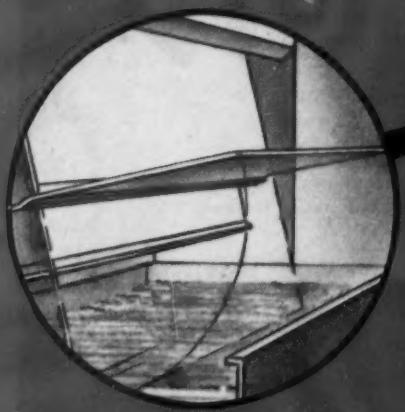
Cincinnati 13, Ohio — Detroit 28, Mich.
Cleveland 6, Ohio — Philadelphia 48, Penna.
Houston 11, Texas — Pittsburgh 22, Penna.
Hastings-On-Hudson 6, N. Y.

HARSHAW

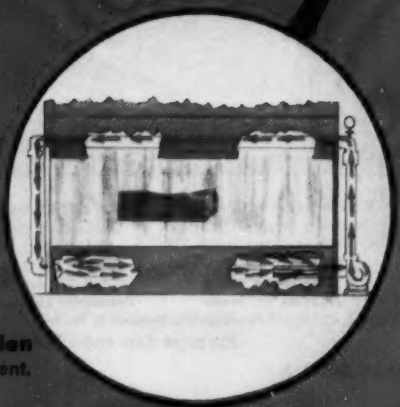
For more data circle **359** on Reader Service Card

What's New

Removable manifold
Entire manifold removes in seconds—without tools!



Hinged water curtain
Swings up for easy skimming of entire collecting pan.



Complete water circulation
No dead ends to accumulate sediment.

Binks Style "E" Dynaprecipitor Water Wash Spray Booth

...easy to maintain...needs minimum space

Built for easy maintenance

Entire manifold and front water curtain come out in seconds—without tools! Really simplifies occasional clean-up of manifold, upper wash chamber, rear water curtain and rear exhaust chamber. Hinged water curtain permits skimming of entire collecting pan without dismantling booth!

Built for low maintenance

All paint collecting surfaces continuously water scrubbed. Curved wash chamber surfaces prevent paint build-up. Complete water circulation system has no dead ends to accumulate sediment.

Needs less floor space

New design shortens depth of wash unit. Never before a booth with such maintenance ease.

Free descriptive bulletin

Ask your Binks jobber or industrial distributor for a copy of Bulletin DUE, or write direct to the address below.

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For more data circle 360 on Reader Service Card

New Equipment, Materials, Processes

Cleaning
Polishing
Plating
Paint Finishing

Metal Parts Cleaner

Circo Equipment Company has introduced a fast-action, agitating parts cleaning machine.

Available in two models, the MPC-3 and MPC-4 are pneumatically operated power-agitation cleaners. Both can be used cold or with steam, gas or electric heat.

Circo Power-Agitated Parts Cleaning Machine

The MPC-3 and 4 are adaptable for use with all solvents, alkalies and acidic solutions. The machines incorporate combination settings for washing, pre-washing, rinsing and drying. A three-way valve controls automatic raising and lowering of the work platform to waist level for easy loading and unloading.

Applications for these machines include solvent and alkali cleaning, pre-painting cleaning, post heat-treat cleaning, quenching, wax coating and protective coating.

Complete specifications are available from Circo Equipment Co., 51 Terminal Ave., Clark, N. J.

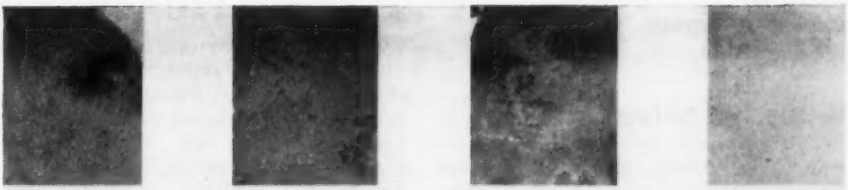
For more data circle **8** on Reader Service Card

★ ★ ★

Chemical Descaling Process for Titanium

Development of a process that descales titanium and its alloys without adversely affecting the physical and chemical properties of the metal has been announced by Turco Products, Inc., Los Angeles 1, Calif.

The process requires two immersion steps (one for scale conditioning and



Photos of panels demonstrate effectiveness of Turco titanium-descaling process. Scale was formed on titanium alloy (6 aluminum, 4 vanadium) at 1750 deg. F. Panel A shows specimen that has been descaled for 25 minutes in mixture of 2 per cent hydrofluoric and 30 per cent by weight nitric acid at room temperature. Panel B is shown before any scale removal has been attempted. Panel C shows how the panel looks after treatment with Turco Scale Conditioner (the first step in the process). Panel D is specimen after immersion in Turco Titanium Descaler. Process doesn't affect surface smoothness.

one for scale removing) and two rinsing steps, following the heat forming or heat treating operation.

The Turco Titanium Descaling Process requires relatively low temperatures (270-280 deg. F.), results in low metal loss (0.0001 inch to 0.0003 inch per side), and is suitably inhibited to avoid hydrogen pickup and the resultant hydrogen embrittlement (± 4 p.p.m. or 0.0004 per cent hydrogen per cycle). In addition, the process will not warp thin-gauge material, cause salt entrapment, or adversely alter the physical characteristics or surface smoothness of heat treatable alloys.

Literature may be obtained by writing Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

For more data circle **9** on Reader Service Card

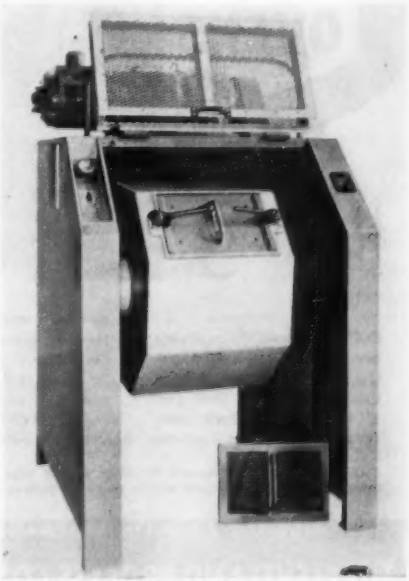
★ ★ ★

Barrel Finishing Machine

A variable-speed finishing barrel has been developed by The Abbott Ball Co., 1064 New Britain Ave., Hartford 10, Conn.

This machine has a 22-inch-by-33-inch barrel with a capacity of 1,200 pounds. Available in either single or double compartment units with or without neoprene linings, the barrel operates at speeds of seven to 30 r.p.m. It has the following safety features: a poppet-type venting valve; a guard which functions as an automatic cut-off switch when raised; and recessed controls.

For more data circle **10** on Reader Service Card



Abbott Ball Variable-Speed Finishing Barrel

Selective Solvents

Nonflammable solvents that will remove oil, grease, and dirt without harming delicate metal parts or electrical insulation, yet are safe enough to use in ordinary work areas with conventional ventilating equipment have been announced by E. I. du Pont de Nemours & Co., Inc., Kinetic Chemicals Div., Wilmington, Del.

Adaptable to vapor degreasing or cleaning by liquid immersion, the solvents will be marketed by the Du Pont Company under its "Freon" trademark. Three types, all classified technically as "selective solvents," are available.

Big advantage of the "Freon" solvents, the company says, rests in their safety, both from a personnel exposure and material standpoint. Because they are nonflammable and nonexplosive, they can be used in open shop areas without danger of fire. In addition, from an inhalation toxicity standpoint, they are rated as highly safe when used in properly designed equipment.

One of the most important uses proved to date, the company said, is in cleaning of electrical motors. Biggest problem there in the past has been the tendency of cleaning solvents to attack insulation on the motor wiring. These solvents will not soften, craze or dissolve any of the commonly used wiring insulation materials, the company states.

CLEPCO Quartz Paint Ovens are based on the use of special CLEPCO Quartz Heaters designed to emit that part of the heat spectrum most readily absorbed by paints.

Another major auto manufacturer reports that CLEPCO Paint Ovens are lower in original cost as well as in operating costs than the conventional gas fired convection ovens previously in use.

CLEPCO'S Complete Research Facilities are at your service to determine the most efficient quartz oven for your requirements.

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THE CLEVELAND PROCESS COMPANY

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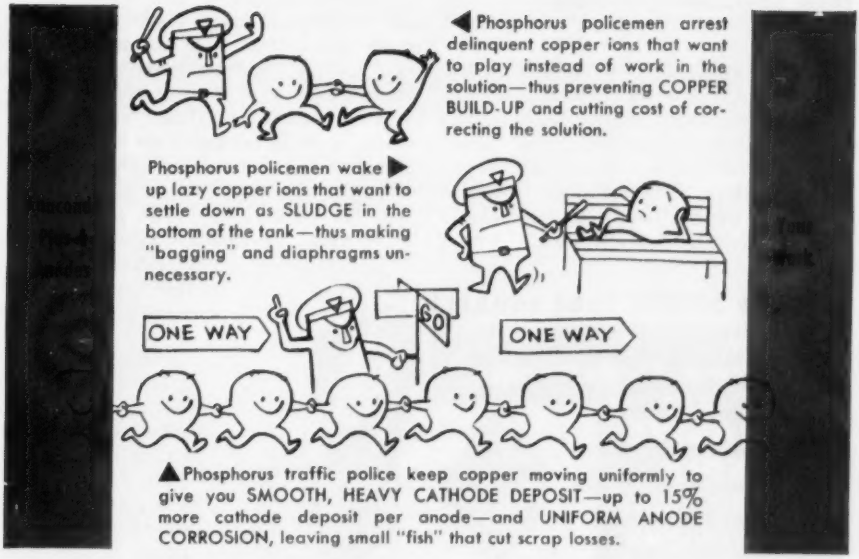

◀ Phosphorus policemen arrest delinquent copper ions that want to play instead of work in the solution—thus preventing COPPER BUILD-UP and cutting cost of correcting the solution.
Phosphorus policemen wake ▶ up lazy copper ions that want to settle down as SLUDGE in the bottom of the tank—thus making "bagging" and diaphragms unnecessary.
ONE WAY
GO
ONE WAY
▲ Phosphorus traffic police keep copper moving uniformly to give you SMOOTH, HEAVY CATHODE DEPOSIT—up to 15% more cathode deposit per anode—and UNIFORM ANODE CORROSION, leaving small "fish" that cut scrap losses.

Here's why Anaconda "Plus-4" (Phosphorized Copper) Anodes cut electroplating cost and give you better work

The playful characters above give a perhaps over-simplified explanation of a laboratory development now saving acid-copper electroplaters, electrotypers, and electroformers a lot of time and money.

Metallurgists in The American Brass Company found that if copper used as anodes contains a small but precisely controlled percentage of phosphorus, all the copper moves uniformly through the acid-copper solution to the object being plated. The phosphorus seems to act like a policeman.

Anaconda "Plus-4" Phosphorized Copper Anodes are the result. They have been proving their superiority in acid electroplating tanks all over the country. Send in the coupon today.

57140

ANACONDA®
"PLUS-4"
(Phosphorized Copper)
ANODES

Made by The American Brass Company

The American Brass Company, Waterbury 20, Conn.
In Canada:
Anaconda American Brass Ltd., New Toronto, Ontario

Please give me details on how I can get a test supply of "Plus-4" Anodes sufficient to fill one tank.

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE....STATE.....

For more data circle **362** on Reader Service Card

Other important uses developed for the "Freon" solvents include cleaning of electronic instruments, photographic and sound recording films and tapes, oxygen breathing apparatus, and typewriter rollers. The "Freon" solvents also have proved useful as general laboratory equipment cleaners.

Another potential use of the "Freon" solvents is as an additive to other more dangerous solvents to decrease the latter's flammability, or change their solvency or boiling point properties for special applications. In such cases, it is important that the solvent mixture be formulated carefully so that the flammability of the mixture will be reduced to a safe level under all normal operating conditions.

Three types of the Du Pont solvents now are available—"Freon" MF, with a boiling point of 75 degrees F.; "Freon" BF, which boils at 199 deg. F., and "Freon" TF, whose boiling point is 118 deg. F. That range, the company explained, makes the "Freon" solvents adaptable for use in many types of mechanical cleaning equipment. Small, portable cleaning tanks are now being developed to make the "Freon" solvents easy to use in small-scale cleaning operations.

For more data circle 11 on Reader Service Card

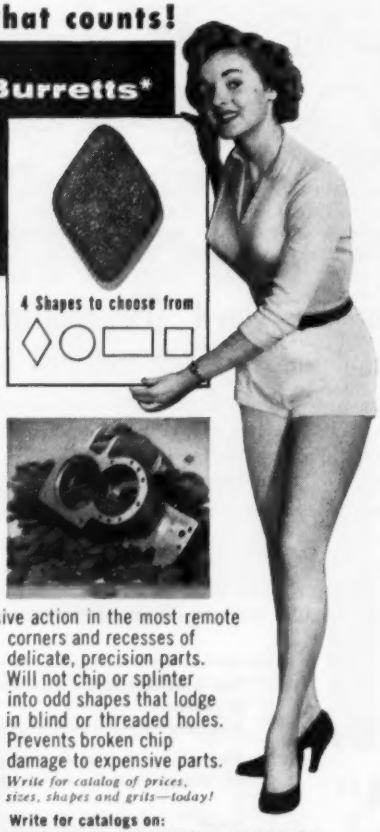
★ ★ ★

Brightener

The Conversion Chemical Corporation has announced Kenvert No. 27, a single-dip brightener.

it's the SHAPE that counts!

ALL NEW... Speed-D-Burretts*
Controlled Size and Shape
ABRASIVE MEDIA for PRECISION BARREL FINISHING



Outlasts other media as much as 10 to 1
Controlled grain size Aluminum Oxide bonded firmly with specially formulated synthetic rubber to allow finishing of precision parts hitherto impossible to barrel finish. Molded and cured to controlled hardness that assures long life, maximum cushioning yet gives desired cutting, honing or polishing action. May be used with any equipment.

New "Burretts" permit abrasive action in the most remote corners and recesses of delicate, precision parts. Will not chip or splinter into odd shapes that lodge in blind or threaded holes. Prevents broken chip damage to expensive parts.

*Pat. Pend.

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3613-e San Fernando Road, Glendale 4, Calif.

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- Copper, steel, alloy or lead sheath
- Explosion and moisture-resistant terminal boxes available
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For these applications:

Heating water, oils, Dowtherm, Prestone, tars, greases • Plating, cleaning and pickling solutions • Heating tanks, drums, process kettles • Melting greases, asphalt, other viscous fluids • Super-heating steam, compressed air • Melting lead, solder, babbitt and stereotype metal.

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Write today for Catalog 50. Full details including prices for Chromalox Electric Immersion Heaters and other units that provide the electrical answer to many more heating problems.

Edwin L. Wiegand Company

7522 Thomas Boulevard, Pittsburgh 8, Pa.

For more data circle **364** on Reader Service Card

A powder, it is formulated to passivate and give a uniform appearance and brightness to cadmium plated articles plated in baths in which brighteners are used. The finish produced has a white metallic color.

This brightener is also said to give excellent corrosion protection, resistance to staining and fingerprinting, and improved adhesion to clear lacquer films. It is produced for bright cadmium in which passivation, sealing and uniform brightness are important. No special ventilation is required for its use. It operates at 65 to 75 deg. F. in either manual or automatic cycles.

Complete details are given in Fact Sheet P-27, available from Conversion Chemical Corp., Rockville, Conn.

For more data circle 12 on Reader Service Card

★ ★ ★

Film Thickness Gage

The BRC Metal Film Gage provides a non-destructive means for determining the thickness of coatings on various non-ferrous metals.

This gage is suitable for measuring nickel silver on silver, silver on brass, cadmium on copper, and other combinations of non-ferrous metals. Measurable thickness ranges extend from 0.002 inch to 0.000004 inch.

The instrument operates essentially as an electronic comparator against samples furnished by the manufacturer or by the user. Each instrument is equipped with two probes, one of which operates at 500 kc and the other at eight mc. The choice of probe depends upon the thickness and type of material to be measured. The thick-

To page 99→

Randolph

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CARLSTADT, N. J.

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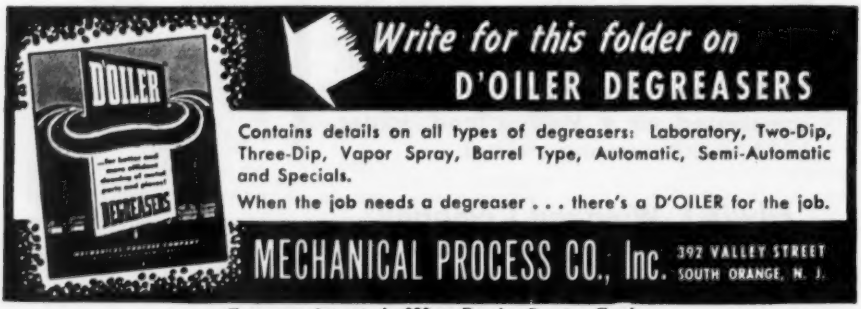
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392 VALLEY STREET
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A NEW FAMILY OF
BRIGHT NICKEL PROCESSES

Hi-C by Udylite

FOR RACK OR BARREL PLATING

FASTER PLATING

BRIGHTER FINISH

SUPERIOR DUCTILITY

EXCELLENT LEVELING

EASY TO CONTROL

SAVES NICKEL

SAVES POWER

MADE ONLY BY UDYLITE

● ***High Chloride* Bright Nickel Processes,*** as pioneered by Udylite give faster, brighter nickel finishes than any other processes. Only Udylite produces high chloride bright nickels.

The Udylite family of nickel processes cover every possible application. The advantages of the Hi-C brighteners are also obtainable in the Watts type formulation. All these new Udylite nickel brighteners are liquids—easy to use.

Hi-C PROCESSES SAVE NICKEL: With their inherent better throwing power, less nickel is used to obtain thickness requirements in recesses. Baths with one third less nickel concentration are used to get the same results. This means decreased drag-out losses. Fewer anodes are needed since Hi-C processes provide the best anode corrosion of any nickel bath. You can operate satisfactorily with fewer anodes in your tanks.

Hi-C PROCESSES GIVE FASTER PLATING: Plating speed is increased 50 to 100% with Hi-C Bright Nickel as compared to Watts type formulations. Higher current densities can be used without burning. Even where agitation is not available, this same improvement prevails. You get faster plating with higher bath temperatures—can be as high as 190°F.

The Hi-C processes have the highest tolerance of any bright nickel baths to zinc, copper, iron, chromium, chromic acid and other common inorganic impurities; no problems with hard water; excellent tolerance to organic impurities. These characteristics of Hi-C processes plus their stability, mean exceptionally long periods between bath purifications and thereby less down time than any other bright nickel baths.

Hi-C PROCESSES SAVE POWER: With the highest conductivity of any bright nickel bath the Hi-C processes require less voltage to do the same job. It means higher current with the same voltage or the same current with lower voltage.

Hi-C PROCESSES PROVIDE:
Exceptional Bright Plate Range • Excellent Leveling • Fast Rate of Brightening • Superior Ductility • Easy Control • Less Hydrogen Embrittlement from Chromium Plating.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST
PLATING SUPPLIER

FASTER PLATING

BRIGHTER FINISH

SUPERIOR DUCTILITY

EXCELLENT LEVELING

EASY TO CONTROL

SAVES NICKEL

SAVES POWER

MADE ONLY BY UDYLITE

UDYLITE 72 Hi-C Bright Nickel Process

FOR RACK PLATING

This is the work horse of the Udylite Bright Nickel Processes. It is an evolution of the time tested, world famous Udylite Number 31 Bright Nickel Process which has been a standard for over fifteen years. It is an excellent process where the production is made up of a wide variety of work.

The Udylite 72 Hi-C Process provides faster plating speed, a brighter finish, unusually simple control and greater throwing power, than Watts formulations.

Other advantages are leveling, tolerance to metallic and organic impurities and freedom from pitting. It produces no harmful breakdown products.

COMPARISON OF

Plating speeds and average current densities for Udylite Watts type bright nickel process vs Udylite Hi-C Bright Nickel Processes		Udylite Bright Nickel Process for Rack Plating. Watts Type. #72—#724	Udylite Hi-C Bright Nickel Process for Rack Plating. #72 Hi-C—#724 Hi-C
	AVERAGE CURRENT DENSITY	40 Amperes per Square Foot	60-80 Amperes per Square Foot
	PLATING TIME FOR .001 THICKNESS	30 Minutes	15-20 Minutes

UDYLITE 724 Hi-C Bright Nickel Process

FOR RACK PLATING

The superior all-purpose Bright Nickel Process. No other process, with or without mechanical agitation, can compare with Udylite 724 Hi-C from any standpoint.

As compared to Watts type bright nickel formulations Udylite 724 Hi-C will permit up to 100% faster plating and you get unusually fast brightening even when thin deposits of nickel are applied. It has been developed also for the best leveling characteristics. Surface imperfections such as polishing lines, extrusion ridges and scratches are leveled out with this process. This means lower polishing costs for a given finish.

Even with the increased brightness and leveling, excellent ductility is maintained. Since 724 Hi-C is tolerant to metallic and organic impurities you will benefit from longer periods between treatments of the solution. This means less down time and lower costs.

You should try Udylite 724 Hi-C Bright Nickel Process. A test will tell you more than words.

BRIGHT NICKEL PROCESSES

UDYLITE 7B4 Hi-C Bright Nickel Process

FOR BARREL PLATING

Here is the bright nickel process for barrels you have been looking for. Process 7B4 Hi-C offers 50% faster plating speed in barrel nickel plating than any other process.

The rate of brightening is so fast that one-third less nickel may be required to achieve the desired brightness and to hide basis metal defects. This also means fifty percent more production due to the acceptable thinner deposits. It allows for easier chromium coverage for racks or in chromium plating barrels. When using 7B4 Hi-C, current interruptions inherent in barrel plating do not cause laminated deposits.

Ductility and adhesion are excellent.

PLATING SPEEDS

Udylite Bright Nickel Process for Rack Plating. Watts Type. #66	Udylite Hi-C Bright Nickel Process for Rack Plating. Air Agitated. #66 Hi-C	Udylite Bright Nickel Process for Barrel Plating in 40 x 30 horizontal barrel—60 square feet of plating area. Watts Type. #7B4	Udylite Hi-C Bright Nickel Process for Barrel Plating in 40x30 horizontal barrel—60 square feet of plating area. #7B4 Hi-C
100 Amperes per Square Foot	150 Amperes per Square Foot	200 Amperes per Cylinder	350 Amperes per Cylinder
12 Minutes	8 Minutes	Plating Time for .0001 Thickness @ 12 Volts 40 Minutes	Plating Time For .0001 Thickness @ 12 Volts 23 Minutes

UDYLITE 66 Hi-C Bright Nickel Process

FOR RACK PLATING

This process was developed by Udylite Research to fill the need for a bright nickel bath which will plate as fast as possible and at the same time retain desirable characteristics of deposit which are frequently sacrificed when other processes are forced beyond their reasonable maximum plating speeds. In order to accomplish this result air agitation is used. This, together with an unusual combination of addition agents, fully covered by Udylite patents, makes possible not only unusually high deposition rates but also exceptional inherent ductility, brightness, and leveling together with minimum hydrogen embrittlement from chromium plating.

Udylite 66 Hi-C has remarkable freedom from pitting without the use of a wetting agent.

If you are now operating at maximum capacity of your present process and must get more production, it will pay you to investigate Udylite process 66 Hi-C.

FASTER PLATING

BRIGHTER FINISH

SUPERIOR DUCTILITY

EXCELLENT LEVELING

EASY TO CONTROL

SAVES NICKEL

SAVES POWER

MADE ONLY BY UDYLITE

BRIGHT NICKEL PROCESSES ARE ALWAYS AVAILABLE

OTHER NEW UDYLITE BRIGHT NICKEL PROCESSES

UDYLITE IS RECOGNIZED THROUGHOUT THE WORLD FOR ITS BRIGHT NICKEL PROCESSES. OVER 20 YEARS OF RESEARCH AND IMPROVEMENTS ARE BACK OF EACH FORMULA. ALL UDYLITE PROCESSES ARE PATENTED. MILLIONS OF GALLONS ARE IN USE.

UDYLITE 42 J Bright Nickel Process
FOR RACK PLATING

This process was developed by the Udylite Research Corporation for die cast and steel parts where only a thin coating of nickel is required. It has a greater tolerance to zinc than any other bath.

Process 42 J gives brightness faster than other processes which makes it desirable where only thin nickel deposits are specified, and still a brilliant coloring is desired. This permits an acceptable plate with great savings in the amount of nickel used.

The 42 J Bright Nickel Process also does an excellent job in plating in the low current density areas and still maintaining its brightness in these areas.

Udylite 42 J is not furnished in a high chloride formulation.

UDYLITE N.C.S. Nickel Process
FOR RACK PLATING

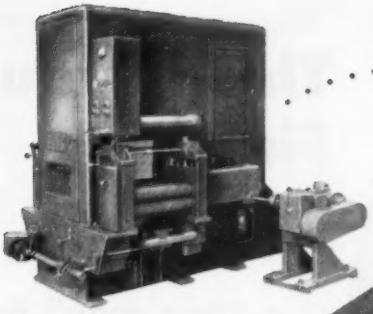
A semi-bright nickel with extremely ductile plate as is necessary for parts such as automobile bumpers and bumper guards where there is frequent impact. The extreme ductility gives the finest protection to the plated parts as it will stand greater deformation without cracking than bright nickel deposits. It produces a sulfur-free deposit. It has excellent leveling and unequalled stability for processes of this kind.

The Udylite N.C.S. Nickel Process hides coarse polishing lines and requires only a light buffing to bring out an excellent nickel color although it is more often used as a base for an overlay of one of the Udylite Fully Bright Nickel Processes.

Udylite N.C.S. is a special formulation featuring ductility although still maintaining the inherent advantages found in other Udylite Nickel Processes.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

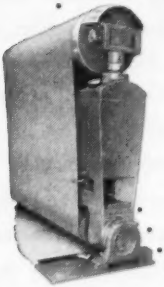
WORLD'S LARGEST PLATING SUPPLIER



ABRASIVE BELT GRINDING & POLISHING MACHINE
(Pinch Roll Type)

For pre-finishing, conditioning and polishing sheets, plates, strips or blanked-out shapes in flat form. Used as single units or in multiple units for progressive line polishing.

for FINISHES that pass inspection the FIRST TIME get a HILL Grinding & Polishing Machine



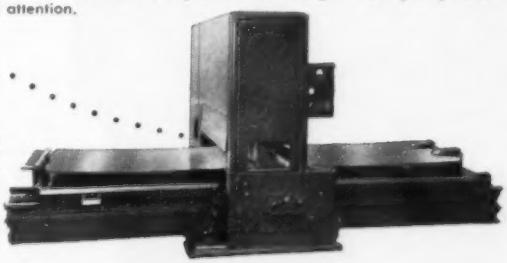
The basic HILL two-roll vertical head with endless abrasive belt. Used in both the Pinch-Roll and the Hydraulic Table types.

● HILL 2-ROLL Vertical Abrasive Belt Grinding and Polishing Machines are made in two general types for producing superior finishes on flat surfaces as required by manufacturers of a wide variety of products such as decorative plastics, auto bumpers, engravers plates, home appliances, etc.

Both types are built in polishing widths up to 60" and larger sizes can be furnished if desired. Your problem will be given our prompt and careful attention.

ABRASIVE BELT POLISHING MACHINE
(Hydraulic Table Type)

For flat polishing of sheets and plates of ferrous and non-ferrous metals. Made in a variety of table widths and lengths with full hydraulic reciprocating table.



THE HILL ACME COMPANY

1209 WEST 65th STREET • • • CLEVELAND 2, OHIO

"HILL" GRINDING & POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • BILLET SHEARS • "CLEVELAND" KNIVES • SHEAR BLADES

For more data circle **368** on Reader Service Card

This is your Finishing Specialist

a "one-man" team

The Finishing Specialist from Lowe Brothers is more than a seller of paints and finishes. He is a production specialist, well-versed in all processes and materials, and the latest in finishing techniques and equipment.

His "know-how," and ability to quickly analyze your problems, is capably supported by highly skilled research, development and production experts. He coordinates this know-how with your individual product and plant requirements and follows through to expedite preparation of the finish.

Call on him now and put this team to work immediately. The result will be the best finish for the job. Call or write The Lowe Brothers Company, 424 East Third Street, Dayton 2, Ohio.

LOWE BROTHERS

INDUSTRIAL FINISHES

. . . also Style-Tested paints for the home

ness is registered directly on the calibrated scale of the instrument.

Literature fully describing this instrument is available from Boonton Radio Corporation, Boonton, N. J.

For more data circle **13** on Reader Service Card

★ ★ ★

Water-Wash Spray Booth

A water-wash spray booth with an improved, air-whirl, water-wash action Dynaprecipitor has been announced by the Binks Manufacturing Company, Chicago, Illinois. The action of the Dynaprecipitor removes virtually all air-borne pigment from the exhaust air, according to the company.

Air is drawn through a continuous curtain of moving water, which scrubs out paint particles by violent water washes. Paint particles are thrown against adjacent walls and curtains by air streams that change direction rapidly. Water then flushes these particles into the collecting pan.

Designated Style "E," the booth has a wash unit of reduced depth. The modified design makes inspection and cleaning easier by permitting hand removal of major sections, such as the front water curtain and manifold.

Another design improvement is the decreased throat area, which, the company says, increases the amount of water per cubic foot at the throat, improving scrubbing action.

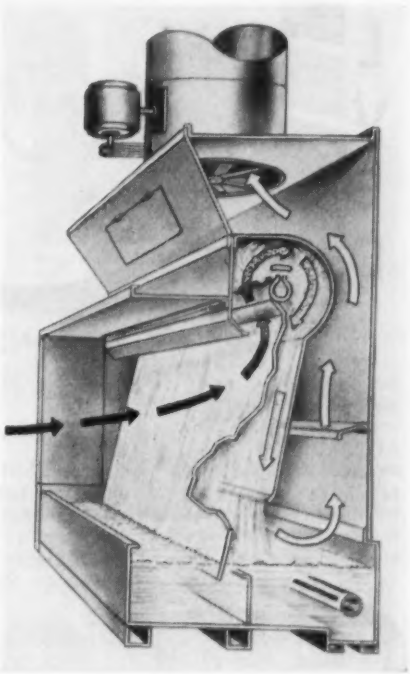
Continuous recirculation of water in the style "E" booth constantly flushes the entire system when the booth is in operation. A throttling valve provides swift adjustment of the water flow across the curtains.

The water intake pipe is located above the floor of the pan. This arrangement, according to the manufacturer, guarantees a sediment-free supply of water. The pipe has four or more intake slots, depending on pump capacity, to provide an even flow of water to the pump and prevent the intake of large pieces of sludge.

Other features are a hinged water curtain, removable manifold, recessed drain and an access door located just below the fan for inspection.

Bulletin DUE, containing complete information on the Style "E" Dynaprecipitor spray booth, can be obtained by writing the Binks Manufacturing Company, 3118-40 Carroll Ave., Chicago 12, Ill.

For more data circle **14** on Reader Service Card



Cut-away drawing of Binks Style "E" Water-Wash Spray Booth. Pigment-carrying air is indicated by black arrows, air that has been cleaned in water curtain by white arrows.

←For more data on advertisement on opposite page, circle **369** on Reader Service Card.

Flocking Adhesive

Adhesive Products Corporation, 1660 Boone Ave., New York 60, N. Y., has announced the development of a flame-resistant flock adhesive called Flok-Grip.

Flok-Grip can be used to attach such materials as cotton, wood or synthetic fiber flock; glitter and flitter; plastic, glass, wood or styrofoam beads; plastic petals, confetti or other decorative materials to such varied bases as natural wood branches, leaves, evergreens, artificial flowers, plaster ornaments, or anything else to which surface decor is to be applied.

Flok-Grip has excellent flame-resistance. A flame put to an object decorated with the aid of Flok-Grip will be self-extinguishing, it is stated.

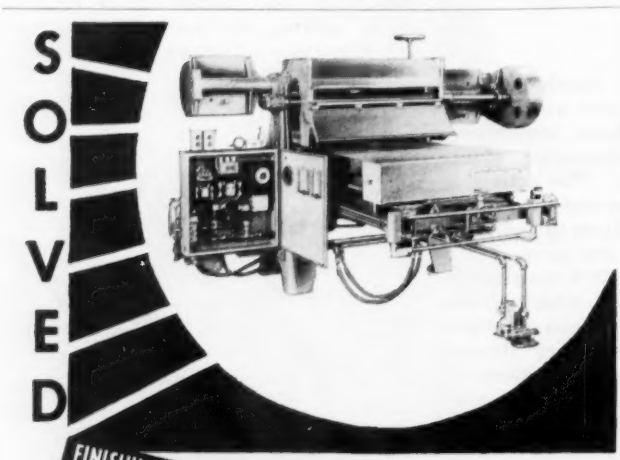
A water-based product, it can be thinned with water, yet is resistant to water when dry. It may be applied by dip, brush or spray, after which the coated object can be dipped, sprayed or sprinkled with flock or other decor. Flok-Grip is white and translucent, and dries without staining. Rapid-drying, it is flexible when dry, and will not become brittle or lose its adherence with age.

For more data circle 15 on Reader Service Card

★ ★ ★

Solvent

Development of Vythene-E, a highly refined grade of 1,1,1-trichloroethane, has been announced by Tect, Inc., Dumont, N. J.



Model No. 203A CLAIR Surface Finishing Machine is YOUR answer!

Enthusiastically accepted for such application as:
AUTOMOBILE TRIM
Photo Engravure Stock
NAME PLATES
Industrial Jewelry, metal or plastic panels; wood, brass, copper, etc., etc.

Single Spindle Vacuum or Platform Table Design. It will accommodate work up to 48" long and 40" wide, or as many small pieces per load as can be nested on the table.

CLAIR *Let us know YOUR finishing problems for a detailed answer*

MANUFACTURING CO., Inc., OLEAN, N.Y.

Offering the Most VERSATILE Line of Surface Finishing Machines

For more data circle 370 on Reader Service Card

This "Famous Name" in "Fans" finishes 2500 lbs./hr. with NEW BURDETT "Radiant Heat" Multi-pass — Roof-mounted Finishing System

Side view of 3-stage washer showing one-stage pump and control panels for Bake Oven and Washer.

Mr W N. Thomsen, Supt
Signal Electric Division
King Seeley Corporation

— has this to say!

The ovens are very quick to react to the various settings which we vary from time to time.. most pleased with the degree of control we have been able to achieve with our Burdett Radiant Fired Ovens

I am sure that if your process requires a _____ oven that the Burdett Radiant Fired Oven will give you very good performance - trouble-free with a minimum of maintenance costs and adjustment.

We are proud of such direct, specific words and particularly so when written unsolicited in reply to an inquiry from another "Famous Name" prospect about Burdett equipment Thank you Mr. Thomsen!

This System —
- Bakes — 12 minutes at 325°F
- Operates — at 11 FPM conveyor speed.
- Produces — hard, very high gloss finish at new low in cost

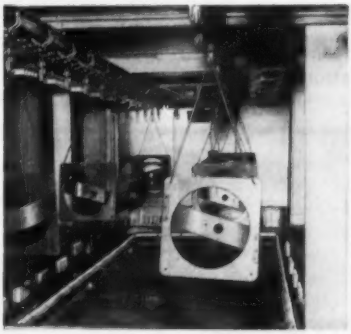
it consists of —
- One 3-stage power spray washer
- One Dry-off oven — 3 min. at 400°F
- Two 12' Water washer spray booths
- One #348 conveyor

Every Burdett "Radiant Heat" Finishing System is engineered to specific production and product requirements — which with the proved advantages of "Radiant Heat" combine to give you a more durable finish, in less time, with interesting savings in production costs.

Whether you contemplate a new finishing department or a conversion of present equipment — or, merely a separate oven addition to your present equipment —

Be Sure it's Burdett — either "Radiant" or "Convection"

Write for the Burdett Story!



Interior of 2-pass Dry-Off Oven, Burdett No. 10L Radiant Line Burners shown on both sides.

Exterior view of Burdett Paint Baking Oven, showing location on plant roof. Saves valuable floor space.

BURDETT
MANUFACTURING COMPANY

4916 South Monitor Avenue • Chicago 38, Illinois
Detroit Philadelphia New York Cleveland Dallas

Manufacturers of
COMPLETE FINISHING SYSTEMS — "RADIANT-HEAT SYSTEMS", OVENS, HEATERS, AIR MAKE-UP UNITS, SPRAY BOOTHS AND WASHERS

For more data circle **371** on Reader Service Card

Vythene-E has a low percentage of non-volatile material and a boiling range much narrower than that of commercial 1,1,1-trichloroethane, the manufacturer states.

Because of the low percentage of residue in the product, Vythene-E is suitable for cleaning of oxygen bearing equipment and highly sensitive electronic parts. Recent tests have shown Vythene-E to be an excellent cleaner for precious metal contacts used in radio and television transmitting, it is stated.

Vythene-E has no flash point. In addition, the product is stabilized to all metals including aluminum and can be successfully reclaimed by distillation.

For more data circle **16** on Reader Service Card

Aluminum Conversion Coating

Development of an aluminum surface conversion coating for protection against corrosion, for improvement of paint adhesion and for ornamentation has been announced by Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

Chief advantage of Turcoat 4178 is said to be the "quick fix" offered by this material. The coating becomes fixed and non-smearing immediately upon application.

The coating formed by the Turcoat 4178 process is acid resistant and has low electrical resistance. It is not brittle. The metal can be bent or formed after the coating is applied. Applied by immersion, spray washer or hand

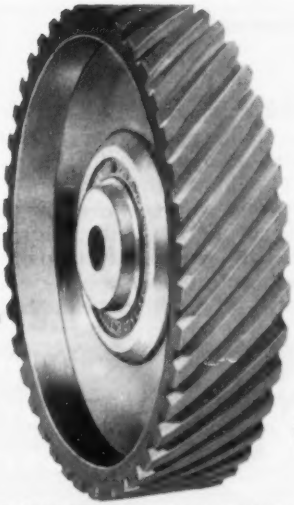
the SECRET of
BETTER
SPRAYING...
"HOLLOW AIR®" produces the widest, wettest, most uniformly distributed spray pattern obtainable handling synthetic enamels —an exclusive feature of the BLACK ARROW line of paint spray equipment.
Less pressure required . . . Paint and air are blended so that force alone is not relied upon to break up the paint.
Write today for information or see your local jobber
BLACK
BLACK MANUFACTURING COMPANY
Livingston, New Jersey
Manufacturers of Precision Built Paint Spray Equipment

For more data circle **372** on Reader Service Card

A BETTER BACK-UP WHEEL

R57

FOR YOUR ABRASIVE BELTS



45°
Standard
For Stock
Removal

AVAILABLE NOW IN POPULAR 14" DIAMETER SIZES AT BIG SAVINGS

You can get the new R57 RUBBER CONTACT WHEELS at lower prices in 14" Diameter sizes*** due to newly developed production techniques. These new wheels have all the well-known features of the R50 and R54 models—LONGER BELT LIFE . . . OIL RESISTANT RUBBER . . . WET OR DRY OPERATION . . . HEAT DISSIPATION . . . MAXIMUM SAFETY . . . other features. And what's more these wheels have a 30% trade-in value.

***The new R57 and the R50 and R54 contact wheels are available in many popular sizes . . . ½" to 2" DIAMETERS in WIDTHS from 1" to 6". Other wheels made to your specifications.

14"

TYPE	WIDTH OF FACE 1"	2"	3"	4"
PLAIN	32.00	34.00	36.00	38.00
SERRATED	37.00	39.00	42.00	44.00

AVAILABLE IN PLAIN OR SERRATED FACE IN ALL DUROMETERS

Write for Details

DElta 6-8900

A WHEEL FOR EVERY OPERATION

45° Scoop Tooth	Slit Serration	Cosmo Expander	"X" Serration
Aggressive Stock Removal	Aggressive Contact Work	Backstand Idler Not Needed	Moderate Contour Work

Specializing in Contact Wheels and Industrial and Printers Rolls

CHICAGO RUBBER COMPANY, INC.

651 MARKET STREET • WAUKEGAN, ILLINOIS

For more data circle **373** on Reader Service Card

methods, the coating formed by the process is a thin, smooth, non-crystalline film with a slight metallic lustre. The color is a light yellow.

The Turcoat 4178 process is easy to control, pH being the only critical point. Although standard temperatures and concentrations are observed, these features are not critical, and minor deviations are not harmful. The process causes only slight sludging.

Literature may be obtained by writing to Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

For more data circle **17** on Reader Service Card

★ ★ ★

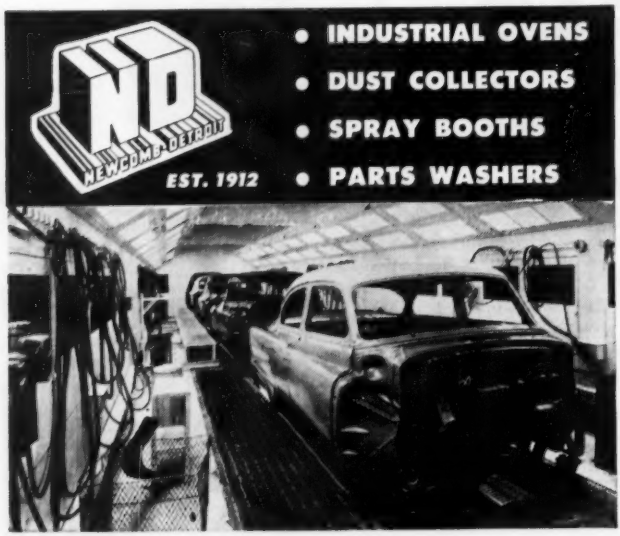
Cadmium Plating Process

A cadmium plating process that produces bright deposits with low brightener consumption has been announced by Hanson-Van Winkle-Munning Co., Church St., Matawan, New Jersey.

The improved Cadalume process increases brightness up to 10 per cent, brightener-life 400 per cent, and plating speeds up to 10 per cent, H-VW-M states.

The process requires two brighteners. One is the Cadalume Make-Up Brightener and is used only when making up a new bath or converting an existing one. The other, called Cadalume Brightener, is used for all maintenance additions.

Results in both rack and barrel plating have been outstanding, H-VW-M reports. In lab and field tests, the bath



SPRAY BOOTHS

Newcomb Spray Booths are adaptable to manual, automatic, and electrostatic spray operations—floor or overhead conveying. Designed for minimum maintenance. Individual tanks or central sludge systems. Automatic sludge recovery systems.

Dip coating and Flow coating systems complete with ventilated drip areas and complete fire protection.

For Bulletins and Quotations, write to:

NEWCOMB-DETROIT

5761 RUSSELL ST. • DETROIT 11, MICH.

For more data circle **374** on Reader Service Card

spray one coat!
SPRAY IT ON IN ONE COAT

strip one sheet!
PEEL IT OFF IN ONE SHEET

FOR COMPLETE PROTECTION DURING FABRICATION

metalGUARD

The remarkable liquid plastic coating for protection of metal surfaces available in solvent and water base types.

STRONG! *Film tensile strength is more than 2500 lbs. per square inch . . . toughest strippable coating known!*

FLEXIBLE! *MetalGuard has an elongation of 200% for stretching during operations, while maintaining constant adhesion.*

DURABLE! *MetalGuard remains strong, flexible, and easily strippable a whole year after application.*

- MetalGuard dries in minutes to a tough, clear film that withstands all manufacturing operations and hazards.
- Available also in consistencies for dipping or roller coating.
- Surpasses pressure sensitive paper protection at a fraction of its cost.
- Reduces refinishing, rejects and extra labor required for operations stemming from scratched, stained or marred materials.
- Protects stainless steel, aluminum, alclad, glass, plated metals and plastic laminates.

DISTRIBUTED BY:

WHITFIELD CHEMICAL CO., Detroit, Mich.; Cleveland, Ohio; Chicago, Ill.
CHROM-O-LITE CO., Minneapolis 23, Minn.
DURLING SCOTT, Baltimore 12, Md.
SUN SHIELD of SOUTH JERSEY, Camden, N. J.
SCOBELL CHEMICAL CO., Rochester 10, N. Y.
PLASTA SALES CORP., Van Nuys, Calif.
THEO. H. DAVIES, LTD., Honolulu, Hawaii.
New England:
MAC DERMID, INC., Waterbury 20, Conn.

GUARD COATINGS CORPORATION
8-05 43rd AVE., LONG ISLAND CITY, N. Y.
Manufacturers of a complete line of temporary protective coatings for metals, glass and enamel.

For more data circle **375** on Reader Service Card

tolerated impurities well, improved deposit distribution, and proved simple to control and easy to operate.

The process is used to protect iron and steel parts against corrosion, and non-ferrous metals against surface tarnish, corrosion or galvanic couples formed in assemblies.

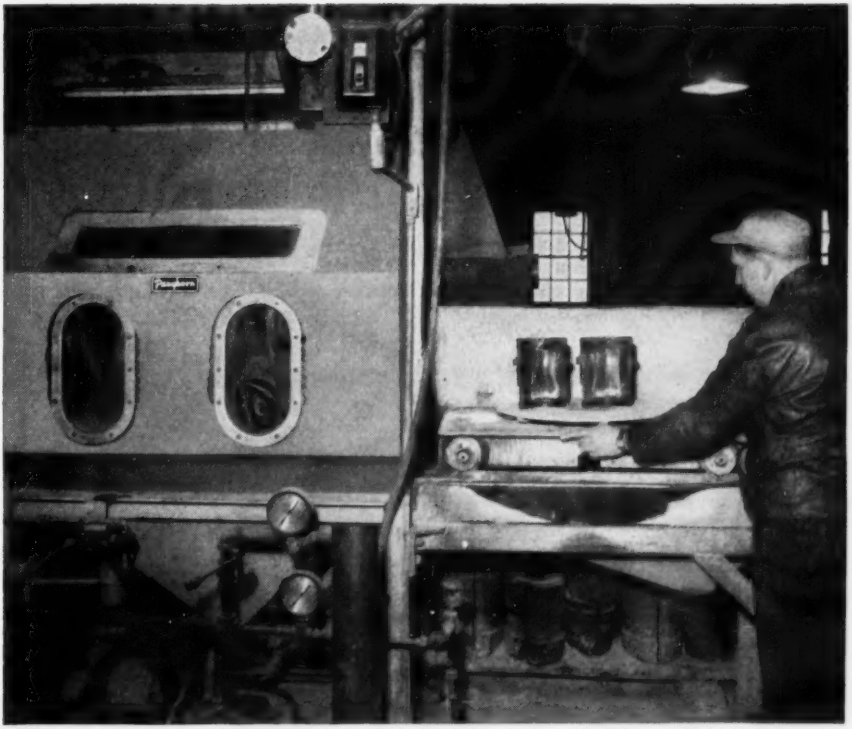
Material	Amount
Cadmium oxide	3.5 oz./gal.
Sodium cyanide	15.0 oz./gal.
Cadalume Make-Up Brightener	1.28 fl. oz./gal.
Operating Conditions	
Cadmium as metal	3.0 - 4.0 oz./gal.
Temperature	85 - 95 deg. F.
Current density	10 - 60 a.s.f.
Voltage	3 - 4 volts

The Cadalume bath is a clear solu-

Cadalume Finishing of a radio chassis is studied in the Matawan laboratory by H-VW-M personnel. Advantages of this cadmium process include increased brightness, increased brightener life and faster plating speeds, the manufacturer states.

STOP COSTLY HANDWORK
Easy LICKS TOUGH JOBS WITH DUAL-ACTION
HEAVY GRINDING, SANDING, DEBURRING TO MICRO-FINISHING
Easy
Model DA Air.
DOES ALL THE JOB ON FIBERGLASS, PLASTICS
Working, polishing (honing) dies, molds of all materials. Very fast. NO DUST. Removes scratches, restores transparency to Plexiglas.
Ask your Jobber for Demo. or write
DUAL-ACTION OR STRAIGHT LINE. AN Easy FOR EVERY JOB.
Model DF Electric.
Model JR Air.
DETROIT SURFACING MACHINE CO.
1266 EAST EIGHT MILE ROAD, DETROIT 20, MICHIGAN

For more data circle 376 on Reader Service Card



Pangborn Hydro-Finish cut cleaning time 50% in this plant

Paid for itself in only six months

Pangborn Hydro-Finish really paid off for this leading glass manufacturer. Cleaning quality increased mold life 10% to 15% and total cleaning and polishing time was cut in half! The resultant savings paid for the machine in 6 months and represented a substantial weekly sum thereafter.

Today, through new design and use of air jet sluriators, Pangborn Hydro-Finish costs less originally, costs less to maintain and gives you easier handling and added efficiency.

Write for Bulletin 1403 to PANGBORN CORP., 5000 Pangborn Blvd., Hagerstown, Md.

USE PANGBORN HYDRO-FINISH FOR:

Deburring • Surface finishing • Finishing threaded sections • Improving cutting tool life • Maintaining dies and molds • Removing grinding lines • Removing heat treat scale • Preparing surfaces

Pangborn

BLAST CLEANS CHEAPER

For more data circle **377** on Reader Service Card

tion, which assists in arranging work in the tank.

Most conventional cadmium solutions, or an existing bright cadmium bath, can be converted to the Cadalume process by adjusting the solution to the formula given in the accompanying table and then adding the required amount of make-up brightener. However, a sample solution should be sent to the Hanson-Van Winkle-Munning Co. laboratory for conversion recommendations.

For more data circle **18** on Reader Service Card

★ ★ ★

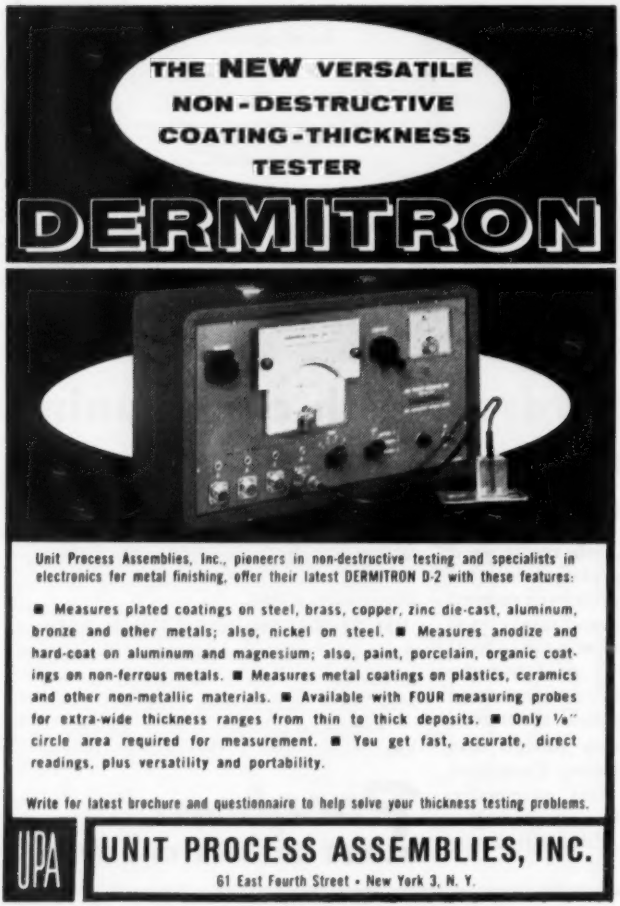
Liquid Additive for Paints

Arnex, a liquid compound that may be blended with any standard finish has been announced by Arnex Chemical Company, Div. of Olo Paint Corporation, 9808 Meech Avenue, Cleveland, Ohio. The addition of this material to paints is said to increase resistance to corrosion, and provide a smoother finish.

For use with both primers and finish coatings, this additive is suitable for protecting metal, wood or composition. Arnex finishes have improved drying characteristics, the manufacturer states.

Arnex is also reported to improve the adhesion of any standard finish. An Arnex finish is flexible enough to resist flaking or chipping under repeated blows of a 5-pound hammer.

Arnex finishes can be dipped,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■ Measures plated coatings on steel, brass, copper, zinc die-cast, aluminum, bronze and other metals; also, nickel on steel. ■ Measures anodize and hard-coat on aluminum and magnesium; also, paint, porcelain, organic coatings on non-ferrous metals. ■ Measures metal coatings on plastics, ceramics and other non-metallic materials. ■ Available with FOUR measuring probes for extra-wide thickness ranges from thin to thick deposits. ■ Only 1/8" circle area required for measurement. ■ You get fast, accurate, direct readings, plus versatility and portability.
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flow-coated, roller-coated, brushed or sprayed. Since this material helps disperse pigments, spray guns can be operated at lower pressure, the manufacturer states.

Arnex is produced in five different formulations for various applications. The manufacturer foresees extensive use of Arnex for products finishing, automobile finishing and refinishing, and for maintenance purposes. For literature, write Arnex Chemical Co., 9808 Meech Ave., Cleveland 5, Ohio.

For more data circle **19** on Reader Service Card

★ ★ ★

Push-Button pH Meter

Beckman Instruments, Inc., has announced the Zeromatic (T.M.) pH Meter—an automatic push button instrument with drift-free amplifier which can be adapted for potentiometer recorder output, automatic temperature compensation, and Karl Fischer titrations.

This line-operated instrument incorporates automatic correction for electronic zero drift and rapid push button control. The Zeromatic has a 0 to 14 pH scale range and two millivolt ranges: 700-0-700 millivolt range and the extended 0 to 1400 millivolt range. "Zero" can be set at any point on the 0 to 1400 millivolt scale.

The instrument is designed for automatic accuracy. Operator reading error is minimized with the mirror-

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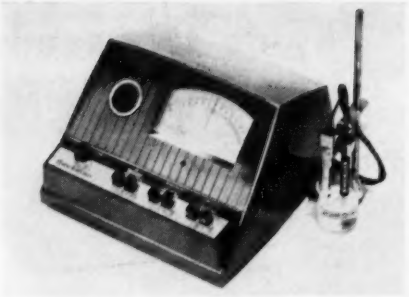
backed scale (pH and millivolt) which eliminates parallax. pH readings are accurate to 0.1 pH unit and reproducible to 0.02 pH. In addition, the instrument employs a "standby" circuit which eliminates warm-up.

The Zeromatic is left connected to the 115-volt power source at all times —on Standby. To make a pH reading, the "Read" button is depressed. Push buttons also control temperature compensation (manual or automatic) and selection of the appropriate millivolt range (700 or 1400).

Connections for a standard potentiometer recorder and for a Beckman automatic temperature compensator are provided on the rear panel of the Zeromatic. A connection also is provided for Polarizing Current in "dead stop" titrations.

For most applications, a Beckman



Beckman Zeromatic pH meter: push-button pH

4990-83 Glass Electrode and a Beckman 1170 Reference Electrode are used; these units are supplied with the instrument. A wide variety of other Beckman glass, reference, and metallic electrodes may be used with the instrument.

For additional information about the Zeromatic pH Meter write to the Scientific Instruments Division, Beck-

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man Instruments, Inc., 2500 Fullerton Rd., Fullerton, Calif., and ask for Bulletin 705.

For more data circle **20** on Reader Service Card

★ ★ ★

Portable Plating Unit

An extra-large-capacity "Jet Plater" portable electroplating unit has been introduced by Sel-Rex Corporation, Newark, New Jersey.

As in the smaller standard sizes, this 100-gallon tank unit is completely automatic in operation and consists of a Sel-Rex Selenium Rectifier with automatic timer; stainless steel tank (which may serve as the anode) fitted with a water jacket for temperature control; a movable work rack which accommodates a portable plating barrel; a centralized control panel equipped with Weston Ammeter and Powerstat control; a filter; and a drip-proof pump with motor.

According to the manufacturer, the design of the Sel-Rex "Jet Plater" permits the construction of custom-built units in much greater than 100-gallon capacities.

The name of the "Jet Plater" is derived from the "Jet" method of solution agitation, which is accomplished through a pump and perforated stainless steel tube at the bottom of the plating tank. The resultant constant motion of the solution around the work, the manufacturer states, aids in producing consistently smooth, even deposits, and high-quality plating.

Got a knotty finishing problem? Then consult our experimental finishing department. We'll untangle it! And we'll analyze the best equipment and abrasive material for the job.

Today . . . before you invest in any finishing equipment . . . send us sample parts, a finished part for use as a guide and your specifications. We'll carry on from there. *We guarantee the same results in your plant as we get in our lab*—so how can you lose? Mail the parts and let's get started.

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corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces	heavy duty maintenance paints since 1883

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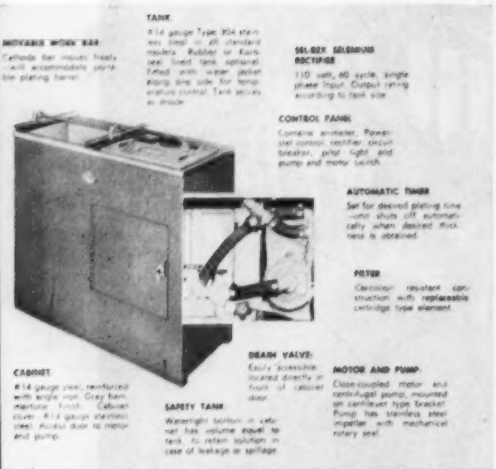


Model & Tank Capacity	Tank Size	Cabinet Size	Rectifier Output	Electrical Specifications
10 gal.	14" x 12" x 15" deep	18" x 36" x 36" high	6-6 volts, 5 amps.	115 volts 60 cycle, 1 phase
20 gal.	18" x 14" x 21" deep	18" x 48" x 36" high	12-6 volts, 10 amps.	115 volts 60 cycle, 1 phase

Photograph and specifications for the Sel-Rex "Jet Plater" portable electroplating unit

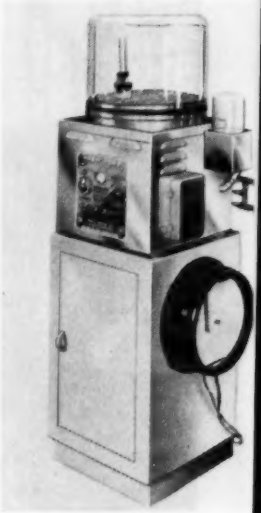
Literature on the Sel-Rex "Jet Plater" may be requested from the manufacturer, Sel-Rex Corp., 155 Manchester Pl., Newark 4, N. J.

For more data circle **21** on Reader Service Card

★ ★ ★

Humidity Chamber

A recently developed two-point programmer and recorder system for Blue M Electric Company's Vapor-Temp Controlled Relative Humidity Chamber meets a large majority of M.I.L., J.A.N., A.S.T.M. and N.E.M.A. Humidity Cycling Tests, the manufacturer states.



Humidity Chamber

Blue M's patented Dual Microtrol Controller is used in conjunction with a 24-hour or seven-day program timer to produce temperature and humidity cycling. Dual Microtrol has two independent adjustable control switches connected to a hydraulic bellows assembly.

The two desired conditions — both wet and dry bulb temperatures—are set on the controllers. The "on" "off" dial riders on the timer are set to correspond with time cycle specified in the test. Dual Microtrol then automatically holds the low condition, wet and dry bulb temperatures, for the desired number of hours. A timer immediately transfers control action of the other set of controllers and the humidity cabinet rises to the high con-

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A full bright cyanide zinc addition agent in powder form for barrel, still, semi, and full automatic plating solutions.

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dition, holding for the desired time, then transferring control action to the initial setting again.

Dry-bulb temperatures can be controlled from room temperature to 170 deg. F. within plus/minus 1 deg. F., relative humidity controlled from 20 to 99 per cent, depending upon dry bulb temperature. Accuracy of plus or minus one per cent R. H. (wet bulb) is possible, the manufacturer states.

Literature is available from Blue M Electric Co., Blue Island, Ill.

For more data circle **22** on Reader Service Card

★ ★ ★

Variable-Speed Drum Rotator

Stationary drum rotator Model 1-5154VS has been introduced by the Morse Manufacturing Company, Inc., East Syracuse, New York. The rotator is designed to handle loads from 500 to 1,000 pounds, and is useful for blending, tumbling and mixing materials in drums.

The unit can rotate 30- to 50-gallon 24-inch diameter drums at any speed from seven to 40 r.p.m. The idler plate can be adjusted every 2 inches for drums of various diameters. Drive and idler wheels are also fully adjustable to accommodate different drum lengths, and provide ample clearance for the largest drum ribs.

For further information on Model 1-5154VS Stationary Drum Rotator, write to the Morse Manufacturing Com-

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For Structural Steel • Tanks • Stacks Walls and Floors • Tank Truck Exteriors

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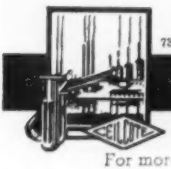

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THE CEILCOTE COMPANY INC.

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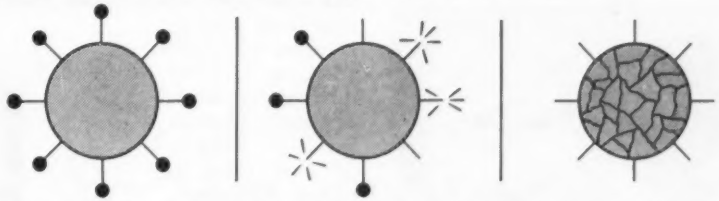
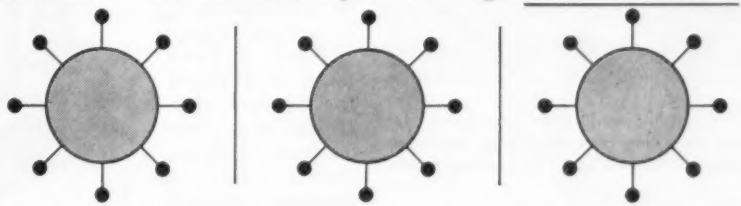
Does the solvent you use go "sour," like this?



Use Nialk® TRICHLORethylene and get psp... like this



1. Stabilizers (small circles) protect your trichlorethylene against heat, light, air, moisture, acids, and such active metals as aluminum. At this stage NIALK stabilizer **looks** the same as the ordinary brand—but NIALK has **psp.**

2. Ordinary stabilizers wear out during use, leave solvent unprotected NIALK stabilizer never wears out. Even after repeated distillations and reuse, it's there working. So you never have to titrate or add new stabilizer.

3. When all stabilizer is gone, bath "sours," making a cleanout necessary. Bath may even stain metal parts. Avoid such damage and minimize downtime by using NIALK TRICHLORethylene with **psp**—permanent STAYING power.

Why you pay less to degrease with Nialk® TRICHLORethylene

You can cut the number of cleanouts of your degreaser when you use NIALK TRICHLORethylene. And you can degrease more parts between cleanouts.

NIALK has a unique stabilizer with **psp**—permanent STAYING power. It's neutral, non-alkaline, non-salt-forming. You never need replenish it.

This NIALK stabilizer actively retards the formation of degradation products —so you can clean your bath easier, faster.

Get proof of NIALK's *cheaper, safer degreasing*—Write on your business letterhead for a resumé of tests made on five leading brands.

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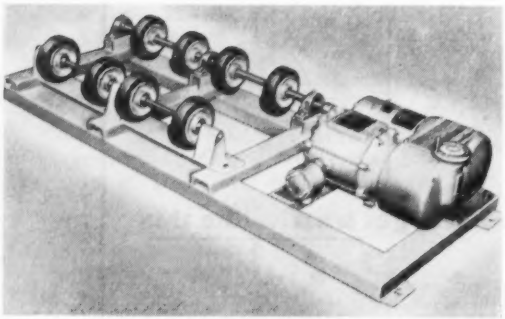


Morse Variable-Speed Drum Rotator, for blending, tumbling and mixing of materials in drums, can handle 500-1000 pound loads.

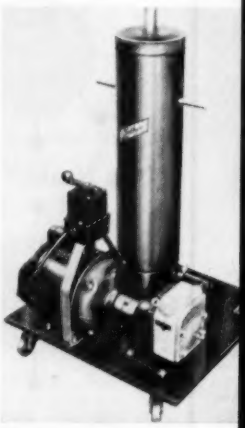
pany, Inc., 762 West Manlius St., East Syracuse, N. Y.

For more data circle **23** on Reader Service Card

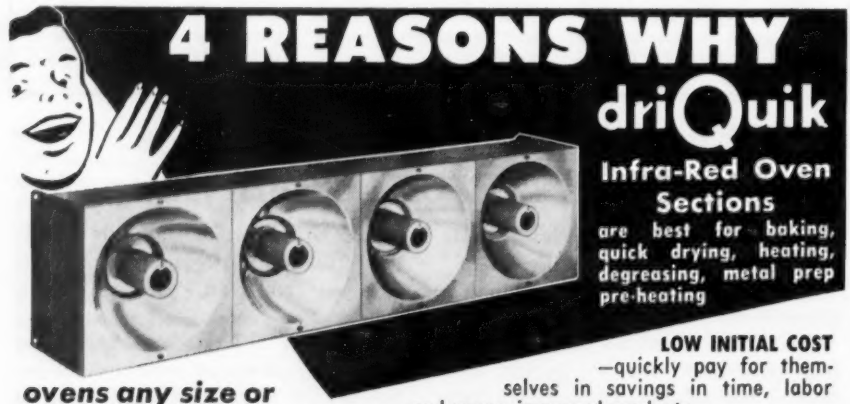
All-Plastic Pump

An all-plastic, self-priming filter pump with Dynel filter medium to remove particles down to one micron in size from acid or alkaline electroplating and industrial solutions, has been developed by Sethco Manufacturing Company, 70-72 Willoughby St., Brooklyn 1, New York.

This filter pump is designed for filtering electroplating and industrial oxidizing agents such as chromic, fluoboric and nitric acids. It is also useful where metal con-



Plastic Filter Pump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EASY TO ASSEMBLE into panels or ovens, because driQuik sections interlocking.

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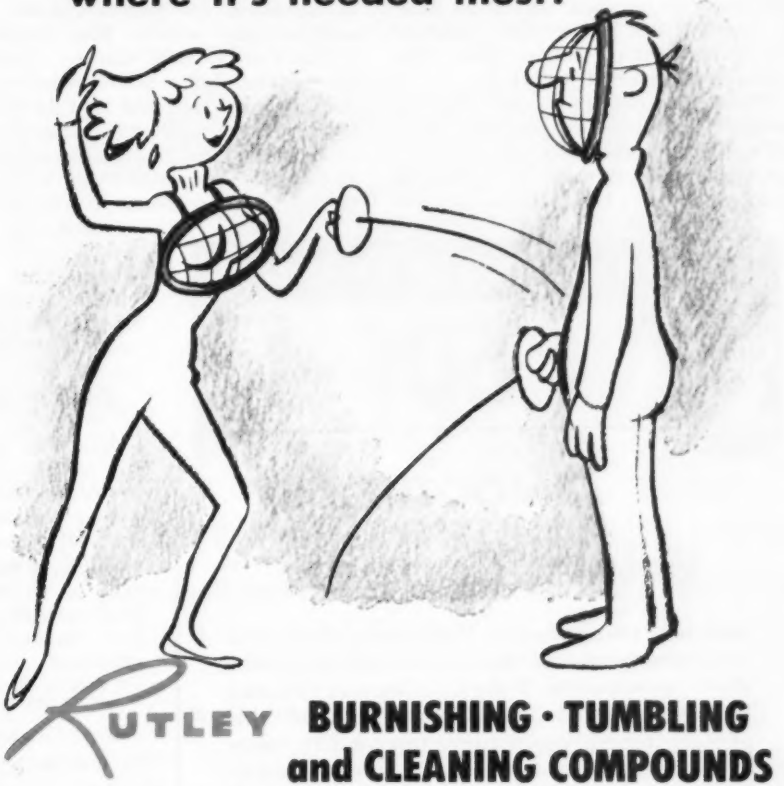
where it's needed most!



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On the finishing line protection *against* unnecessary lost time, excessive rejects, and quality variations is vital for low cost, high efficiency finishing. This is why more and more progressive manufacturers are turning to Rutley *specialized* metal cleaning, burnishing and tumbling compounds. They cost less because they do their work so well.

If you have a special problem why not let a Rutley technician help you solve it. For further information write for Rutley *Bulletin H-3*.

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Finest Quality BALL BURNISHING and TUMBLING FORMULA producing superior color, lustre and finish on Zinc Die Castings.

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New Liquid BURNISHING COMPOUND assures highest quality finish on Aluminum, Zinc, Brass and Steel.

DC-102
REVERSE ELECTRO CLEANER
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For more data circle 392 on Reader Service Card

tact must be avoided, for its all-plastic construction is corrosion resistant and has no metal-wetted parts. The pump is designated VPHI-20.

The pump itself has a polyethylene body and a Hypalon impeller. It is self-priming, self-lubricating and will not leak. It is coupled by a flexible coupling to a ¼-h.p., totally-enclosed, ball-bearing motor, and has a capacity of 50 to 300 g.p.m., the manufacturer states.

According to Sethco, Dynel, the acid-resistant acrylic fiber made by Union Carbide and Carbon Corporation, successfully filters solutions of chromic acid, iron and lead fluoborate, ferric chloride, silver nitrate, sodium hypochlorite and many other industrial and electroplating solutions. Dynel removes particles down to one micron in size and has applications where other natural or synthetic fibers will deteriorate, the firm reports.

The filter pump is reversible, enabling the operator to clean out the filter chamber without dismantling. This backwashing action is said to provide long cartridge life for improved economy.

For more data circle **24** on Reader Service Card

★ ★ ★

Chromate Coating

Ker-Chro-Mite Al, a chromate conversion coating for aluminum and its alloys, produces a yellowish protective coating that is suitable for use as a paint base or as a final finish.

Raise Your Plating Production

UP TO 60% WITH

SMOOTHEX

Bright Copper!

This new revolutionary High-Speed Process is your answer to an easier controlled, faster, more economical Bright Copper Plating method. Plating specialists developed this process to help you achieve top quality, more profitable plating solutions capable of increasing your production 30 to 60 per cent with your present equipment. You can cut your cost and do a better plating job in a very short time by communicating with us, at once!

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Two-Spindle Variable Speed Lathe

STEP UP PRODUCTION—REDUCE FINISHING COSTS with Hammond DOUBLE SPINDLE LATHES

- No "down time" for one operator when the other changes wheel — each operator has his own motor, control and variable speed drive.
- Convenient Variable Speed dial is within arm's reach of the operator — no "climbing" around in back to change speeds.
- Wheel economy and better finish. As wheel wears each operator can increase speed — to maintain constant peripheral speed for uniform and better finish, maximum production and wheel life.
- Available in 3 sizes — two 5 HP, two 7½ HP or two 10 HP.

ALSO AVAILABLE IN WIDE SWING MODEL VRROW

Wide swing construction, with extended bearing housings and spindles, provides additional working space for large, bulky pieces.

Cost reduction is the need of the day — Write for catalog.

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For more data circle 394 on Reader Service Card

The solution is a strong acid and will attack stubborn oxides. It is supplied in concentrated form and diluted for use. The process is said to require little control. Full data on the process is available from Kosmos Electro-Finishing Research, Inc., 140 Liberty St., Hackensack, N. J.

For more data circle 25 on Reader Service Card

Silica-Free Blasting Material

A blasting material that is recommended for sandblasting of vats, castings, ships, tanks, buildings, stainless steel and non-ferrous metals is silica-free. It therefore reduces the health hazard, cuts faster, flows freely in any weather, and will not rust or pack, the manufacturer states.

Called Black Beauty blast grit, it is practically dustless; thus it leaves surfaces cleaner, it is stated. Black Beauty is said to leave the surface in better condition for finishing, with no corrosive deposits to mar the bond.

Black Beauty will not clog or foul machines and is completely inert. It can be used with standard equipment. No changeover is necessary.

Free samples of Black Beauty are available from the manufacturer, H. B. Reed & Co., 6618 Kennedy Ave., Hammond, Indiana. Type of work or finish or degree of etch required should be specified when requesting information on this abrasive, as Black Beauty comes in six degrees or grades.

For more data circle 26 on Reader Service Card

Testing For Causes of Rough Deposits?

9. Run a plating test

By using a testing procedure it will be possible to determine chemical adjustment, addition agent control and bath treatment necessary to return the bath to normal plating. Such testing may also indicate the need for greater filtering capacity or for continuous filtering. If filtering is required on a laboratory scale to obtain satisfactory test results then filtering is required to obtain quality production plating.

Filtering Methods

method for filtering plating baths with a

FREE! Your guide to better plating

This technical article — "The Use of Filters in Electroplating" — written especially for you by Mr. J. B. Mohler, Finishing Consultant is available to you for the asking. Write for your free complimentary copy today.

Write

ALSOP ENGINEERING CORPORATION

1203 Keen St., Milldale, Connecticut

For more data circle 395 on Reader Service Card

REPORT NO. 1 / ON LOWERING TODAY'S COST OF PRODUCTION

Enough DIVOBOND to phosphatize 1,000 sq. ft. of work

low cost, scale-free phosphatizing

One-half pound of Divobond in solution covers 1,000 sq. ft. of work with a dense, tight, uniform iron phosphate coating. Using less compound to initiate a better finish automatically lowers production costs.

Another cost-cutting Divobond feature is its remarkable scale prevention action. Even in hard water areas, plants report a year or more of continuous operation without a sign of scale. Build-up is eliminated and nozzles are free to spray on even, uniform coatings, thus eliminating appreciable maintenance costs. This scale prevention also lowers heating costs by keeping coils free of insulating blankets of scale.

Divobond is easy to control. Its non-critical pH permits operation through a wide range. A simple titration shows solution concentration.

Divobond may be used in two and three stage washers with mild steel equipment. Reduced capital equipment requirements and economical surface preparation possible with Divobond suggests consideration in your plant.

Ask your D-Man for a plant survey to determine Divobond's advantages in your operations. Or, for Divobond literature, write to *Metal Industries Department, The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.*

PLANTS IN CHICAGO, NEWARK, AND SOUTH GATE, CALIF. WAREHOUSES IN PRINCIPAL CITIES.

DIVERSEY DIVOBOND

For more data circle **396** on Reader Service Card

Vacuum Metalizing Coating

An improved coating for use in vacuum metalizing has been announced by Logo, Inc. Named Logo M-241, this material is said to give good abrasion resistance.

Logo M-241 requires a ½-hour bake at 325 deg. F. Hardness as measured by the pencil test is between 7H and 9H. It is said to withstand 1,500 hours at 110 deg. F. and 100 per cent relative humidity in a humidity cabinet.

For more data circle **27** on Reader Service Card

★ ★ ★

Sharp Turn for Conveyor

A conveyor turning point that is adjustable to 180 degrees turn on as small as a five-inch radius, for horizontal turns, and vertical turns to 128 degrees, has been announced by Chain - O - Flex Corp., 3334 Lincoln Ave., Franklin Park, Ill.

These corners allow a conveyor to be used with greater flexibility. Adjustments of corners can be made on the job, permitting on-the-spot changes to meet particular requirements.

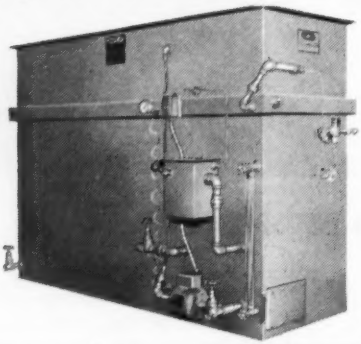
The corners are used in conjunction with Chain-O-Flex Continuous Conveyor-A-Series, which consists of a link chain moving in steel tubes.

Three sizes of drive mechanisms are available, with single speed or three-to-one, infinitely variable-conveyor - speed adjustment.

Systems up to approximately 350 feet and loads up to 30 pounds per

Circo Vapor Degreasers use 30% less solvent

NEW DESIGN



MODEL OP2

New, modern Circo vapor degreasers — whether large or small — are engineered to save on solvent consumption. Construction features like balanced condensing coils, leak-proof pumps and dual vapor-level control are today saving companies 30% and often more in solvent use. Circo degreasers perform faster, save precious man-hours through engineering designs developed through 30 years experience in vapor degreasing.

CIRCO PRODUCTS for METAL CLEANING

Phosphatizing Units
Metal Parts Washers
Industrial Ovens
Spray Pickling
Flow Coating
Complete Systems
Vapor Degreasers

Send for Circo's comprehensive 32-page Manual on Vapor Degreasing. No Obligation.

SINCE CIRCO 1923

EQUIPMENT COMPANY

124 Central Avenue, Clark (Rahway), New Jersey — Offices in Principal Cities

PER-SOLV (Perchlorethylene) CIRCO-SOLV (Trichlorethylene)

For more data circle **397** on Reader Service Card

WHAT KILLS YOUR PUMPS?

CORROSION...ABRASION...VIBRATION?

Heavy rubber or special linings molded in the case to resist corrosion and abrasion

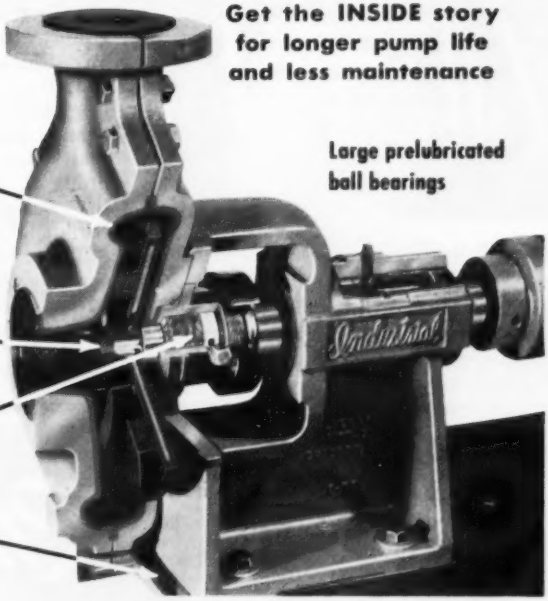
Get the INSIDE story for longer pump life and less maintenance

Large prelubricated ball bearings

One-piece molded impeller and oversized shaft prevent oscillation

Easy access to corrosion-proof stuffing box

Rubber covered base

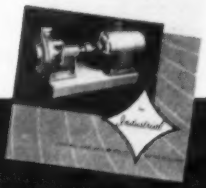


Industrial RESISTS ALL 3

Lined to suit the job . . . with the exact rubber formula most resistant to your processes fluids in INDUSTRIAL'S own rubber compounding and lining division. Also lined with Neoprene, Saran, Hypalon or Hycar. Many sizes up to 450 gpm.

Write for 8-page bulletin with head, GPM and efficiency graphs.

CENTRIFUGAL PUMPS



Industrial

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 OGDEN AVENUE • CHICAGO 50 ILLINOIS

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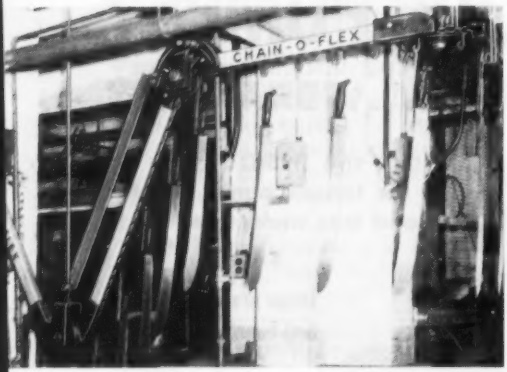

Chain-O-Flex Conveyor Corners: tight turns

foot are practical with one Chain-O-Flex drive. Conveyor hooks may be spaced as close as six-inch centers.

For more data circle **28** on Reader Service Card

Demineralizer

Purification by ion-exchange to produce water with resistance of over 1,000,000 ohms per cubic centimeter is now possible with the Barnstead MM-O Mixed-Bed Regenerative Demineralizer. Cation and anion resins are mixed in one resin bed, thus permitting the ion-exchange process to take place hundreds of times as the water flows through.

Barnstead Demineralizer

The manufacturer states that Model MM-O removes approximately 1,100 grains per regen-

Rhodium

ELECTROPLATING SOLUTIONS

Rhodium Plating for jewelry offers the advantages of whiteness, lustre and corrosion resistance . . .

For electrical and other applications: protection from corrosion in air or unusual conditions . . . Particularly recommended for printed circuits and contact surface . . .

Can be applied to many surfaces from less than one to one hundred milligrams per square inch . . .

Consult our staff, without obligation, about your specific plating problems.

SINCE 1901

Specialists in the Unusual

SIGMUND COHN MFG. CO., INC.

121 SOUTH COLUMBUS AVENUE • MOUNT VERNON, NEW YORK

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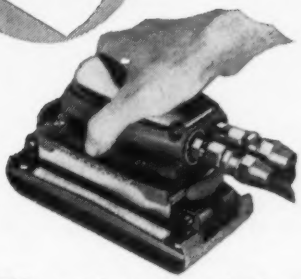
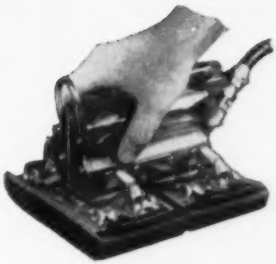
Which Model for YOU?...

SUNDSTRAND AIR SANDERS

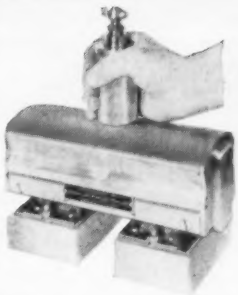


OS-700—new fast-action orbital sander. Single pad. Over 6000 cycles per minute. Removes material faster, easier. Built-in water attachment for wet sanding. 5 lb.

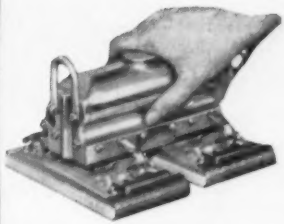


1000—light, fast, easy-to-handle straight-line sander. Big abrasive area. 2500 oscillations per minute. For wet or dry sanding. Palm lever controls both air and water. 7½ lb.

SP-101—versatile, single-pad, straight-line sander. 3000 oscillations per minute. Excellent for fine work on smaller pieces. 5 lb.



600—heavy-duty, straight-line model for sanding, pumice rubbing, or polishing. Sands wet or dry. 1100 oscillations per minute. 30 lb.



4000—9 lb., 2-pad, straight-line sander for longer, slower stroke. Built-in water attachment. 2100 oscillations per minute.

SUNDSTRAND MACHINE TOOL CO., Pneumatic Division, Rockford, Illinois

SUNDSTRAND

A name to remember in **AIR SANDERS**

For more data circle 400 on Reader Service Card

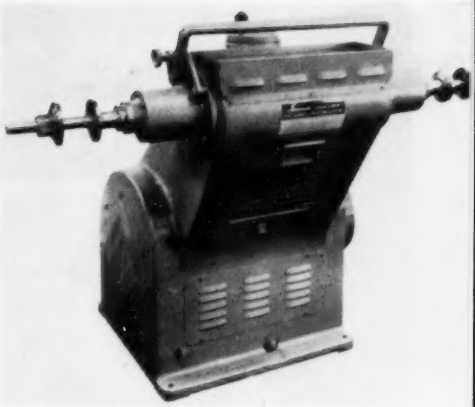
eration. The unit consists of a transparent plastic column mounted on a plastic base with molded plastic fittings top and bottom. Flow rate is from 10 to 30 g.p.h. Information is available from Barnstead Still & Demineralizer Co., 130 Lanesville Terrace, Boston 31, Mass.

For more data circle **29** on Reader Service Card

★ ★ ★

Variable-Speed Lathe

The Hammond Model VRO Variable-Speed Polishing and Buffing Lathe is now available with a special braking bar that allows the operator on either side of the lathe to actuate it. A safety feature, it is also a convenience: a man on a "sit-down" operation can operate the brake without



Hammond Model VRO Variable-Speed Polishing and Buffing Lathe: special braking bar

rising, and either operator has easy access to it.

The VRO Variable Speed Polishing

JELCO

• BRASS ADDITIVE

—Also available JELCO COP-BRITE and BARREL NICKEL Brightener

• Increases efficiency and throwing power
• Produces brighter and faster plating
• Allows use of higher current density
• Eliminates cyanide and ammonia fumes
• Retards anode polarization

A Proven Process . . . Used successfully by both manufacturers and job platers

Non-Critical Boosts Production Cuts Rejects

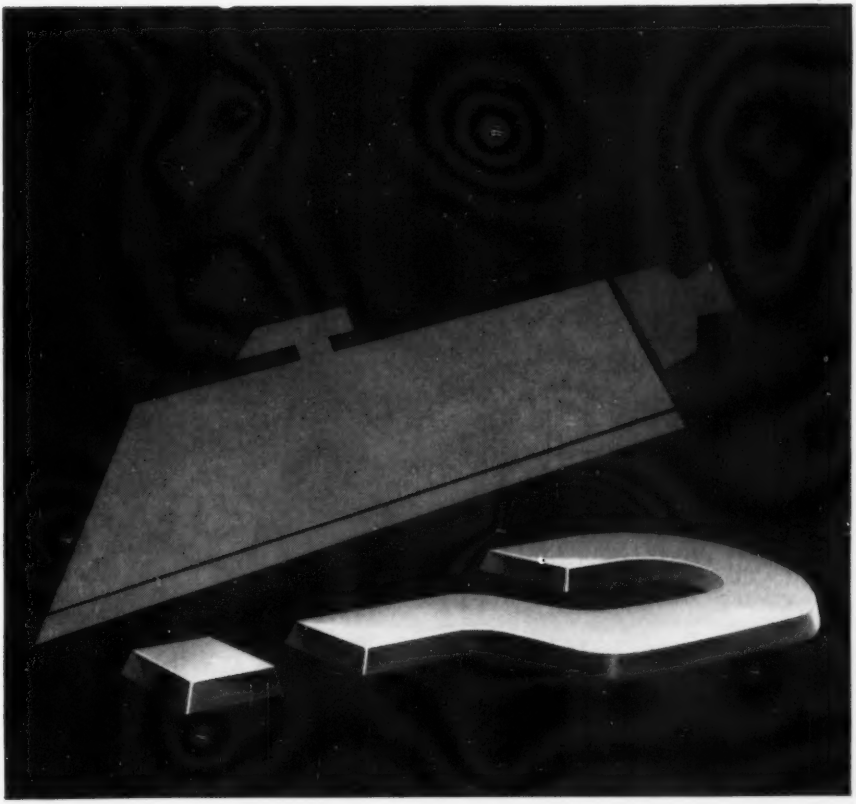
Can be used in standard and high speed formulations . . . still and barrel plating

• Write for complete information

For the "Solution to your Plating Problems" . . . Come to

JELCO FINISHING EQUIPMENT CORP.
153 EAST 26th STREET • NEW YORK 10, N. Y.
Telephone: LExington 2-3055

For more data circle **401** on Reader Service Card



Iron out your chrome-plating problems with Diamond

Let DIAMOND's technical specialists go to work on your chrome-plating problems. These men work full time on customers' questions. They come up with complete, profit-making answers. Their service is free.

In producing chromic acid, DIAMOND controls *every* processing step to safeguard quality. DIAMOND experience starts with importing the chrome ore and making the soda ash, and extends through production and delivery. It even includes standing by your side, if you wish, to help you get top-quality plating results and keep costs low.

DIAMOND facilities—two chromic acid plants and nine warehouses and sales offices across the country—assure you uninterrupted supply and dependable service. DIAMOND ALKALI COMPANY, 300 Union Commerce Building, Cleveland 14, Ohio.

DIAMOND CHEMICALS

Diamond Chromic Acid

For more data circle **402** on Reader Service Card

. . . solution to a polishing problem

ELECTRO POLISH

production pieces
faster—better with

Electro-Glo
SOLUTIONS

- Polishes—Deburrs—Levels
- Saves Time—Labor Costs
- Improves Product Appearance
- Sold as a Concentrate
- Used with Standard Plating Equipment

Electro-Glo electropolishing is the modern, economical finishing method in which a fractional amount of metal is removed rather than deposited as in plating. Electro-Glo comes to you as a concentrate, and you purchase the balance of the solution locally. It is used in conventional plating equipment.

Electro-Glo does a multiple job. Deburring, leveling, and polishing take place simultaneously. Any degree of brightness is easily obtained. Electro-Glo concentrates process Copper Alloys, Stainless Steel, Carbon Steel, and less common metals and alloys. The Electro-Glo process is recognized as a superior polishing method, and has an enviable record for Saving Time, Saving Labor, Increasing Production . . . and NO royalties!

FREE SERVICES

Engineering service available. Sample piece electropolished by the Electro-Glo method without charge. Equipment layout and cost analysis furnished. Special methods and finishes developed. Send for full details.

Electro-Glo CO.
1429 South Talman Avenue Chicago 8, Illinois

For more data circle 403 on Reader Service Card

and Buffing Lathe, a heavy-duty machine that is suitable for polishing, brushing or buffing operations, has spindle speeds that are infinitely variable between 1,500 and 3,000 r.p.m. Spindle speed is instantly changed by turning a dial.

A variable speed polishing lathe allows the operator to choose the most efficient spindle speed for each job. As brushes and buffs wear down, the spindle speed can be increased correspondingly, maintaining correct peripheral speed; thus the wheel can be used efficiently as it wears down.

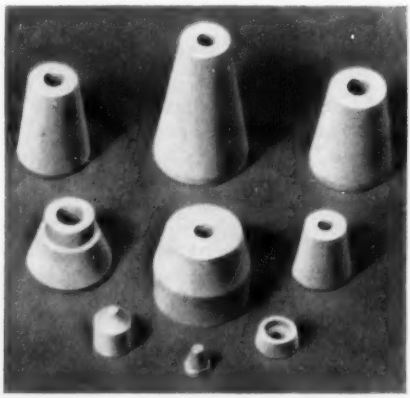
Literature on this polishing lathe is available from Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Michigan.

For more data circle **30** on Reader Service Card

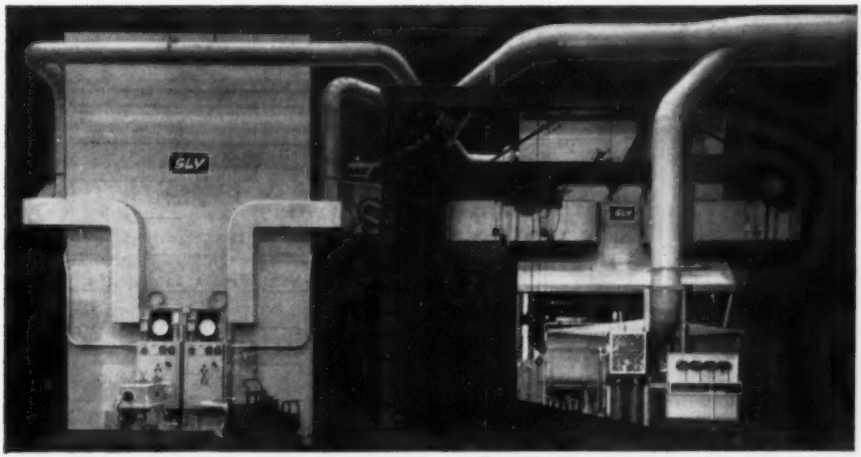
★ ★ ★

Deburring Media

A deburring agent for machined or stamped metal parts and sheet metals such as aluminum, called AlSiMag 491, has been introduced by Steatite Div., American Lava Corp. These



AlSiMag 491 Media: for deburring operations



Four Sly Ovens at General Electric, Erie.

4 SLY Ovens Give Close Baking Control at G. E.

Correct baking of varnish on armatures, field coils and frames is essential to insure full protection to the units in later use. Four tower-type Sly Ovens at the Direct Current Motor and Generator Department at General Electric Co., Erie, Pa., provide the exact temperature required. They are an integral part of production, assuring a smooth, continuous flow.

The ovens are arranged in pairs. Each is a double-compartment oven with a common wall separating the zones. Each zone has its own heating and control system and individually automatic, program controlled conveyor system to meet the required, preheat, first and second baking operations. Complete cycle includes preheating, varnish dip, 4-hour bake, varnish dip and another 4-hour bake. Operations are such that the ovens reach their required temperatures prior to the start of the work day.

This installation is typical of the time and money savings Sly Convectioneered Ovens bring to drying, baking and finishing operations. *Write for catalog describing Sly's complete line.*

Designers and Manufacturers of: Dust Control Systems, Industrial Ovens, Blast Cleaning Equipment, Tumbling Mills.

SINCE 1874 SLY

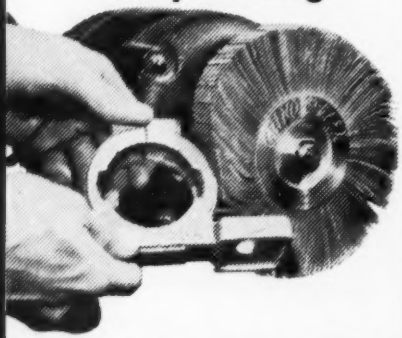
THE W. W. SLY MANUFACTURING CO.

4784 TRAIN AVENUE • CLEVELAND 1, OHIO

OFFICES IN PRINCIPAL CITIES

For more data circle **404** on Reader Service Card

for light grinding and polishing



GRIND-O-FLEX

FLEXIBLE GRINDING WHEEL

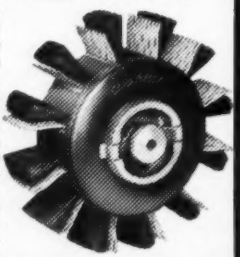
This resilient polishing and grinding wheel removes burrs, flash, and blends surface blemishes from contoured parts without digging into the metal. Consists of hundreds of "leaves" of aluminum-oxide cloth sealed to a core. Attaches to your present power tools or any rotating spindle. No special equipment to buy. Wide range of grits. Safe and easy to use. Mount several wheels side by side for any required width. There's nothing like it.

For finishing complex contours

SAND-O-FLEX

BRUSH-BACKED ABRASIVE WHEELS

Use Sand-O-Flex for lighter and more intricate contour work on metals, plastics, wood, rubber, etc. Cannot gouge, "flat" or mar surfaces. Attaches to motor shaft or power tools. Available in four sizes from portable to heavy-duty production line models. Refill abrasive cartridges range from coarse to very fine for all types of finishing and polishing. Write for catalog and prices.



MERIT PRODUCTS, INC.

4023 Irving Place, Culver City, California

For more data circle 405 on Reader Service Card

ceramic deburring agents are said to resist "loading" with metal. They are made for deburring or sharpening. Diameters range from ½ to 3 inches.

AlSiMag 491 is a fine textured, vitreous ceramic of the alumina type. It is extremely hard (measuring more than 9 on Mohs' scale) and its strength and durability are particularly suited for these applications.

For information on AlSiMag 491 deburring media contact American Lava Corp., Cherokee Blvd. & Mfgrs. Rd., Chattanooga 5, Tenn.

For more data circle **31** on Reader Service Card

★ ★ ★

Coloring Copper

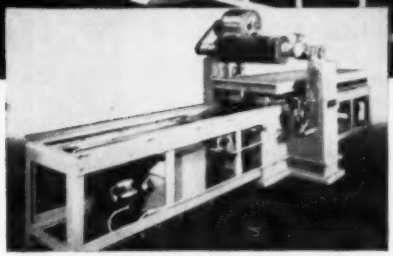
Enthone, Inc., 442 Elm St., New Haven, Connecticut, has developed a process called Enthocolor 220, which produces brown and shiny blue-black oxide coatings on copper and copper-base alloys. Uniform brown colors can be produced on copper and on almost all copper alloys. Blue-black and brown colors are produced on brasses containing 20 per cent or more of zinc. Since the finishes formed are oxides, no subsequent crystal spotting occurs. The adhesion of the finishes is such that work can be severely deformed without causing the coating to flake, the manufacturer states. Two-tone effects can be obtained by relieving portions of the oxide coating.

Enthocolor 220, supplied as an alkaline salt mixture, is used in solution at 180 deg. F. to 225 deg. F. Parts to be colored are given the usual preparatory treatments before they are immersed in the solution for periods of 1 to 15 minutes. The finishes produced are also excellent bases for paint and the process can be used as a

CENTRAL Polishing Machines

Pay Big Dividends in Time Saved and Improved Quality

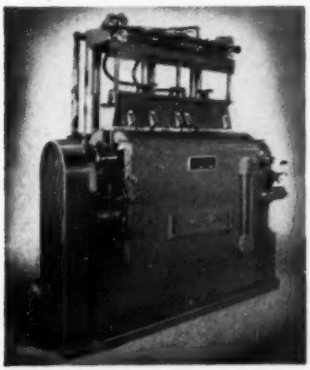
TANDEM ROLL HORIZONTAL MACHINE
For cut down and finishing of sheets, plates, extrusions, trim, etc.



SINGLE ROLL HORIZONTAL MACHINE
Hydraulically operated, with patented hydraulic contour device. Tables on all machines may be oscillated sidewise.

- *FASTER*
- *MORE EFFICIENT*
- *ECONOMICAL*

For cutting costs, improving quality and speeding up your finishing operations on sheets, plates, extrusions, rods, tubing, auto trim and many odd-shaped pieces, Central Polishing Machines will meet every production requirement as they have done so successfully wherever they have been installed.



VERTICAL POLISHING MACHINE
2 sizes, 18" and 36" stroke. Hydraulic contour device. Gives a high finish to many odd-shaped pieces.

Horizontal Machines are built in single and tandem roll models, 30", 40" and 50" widths, in any length. Are hydraulically or electro-hydraulically operated from a central operator's station and equipped with our patented hydraulic contour control. Stroke adjusted from 2" to full capacity in stepless increments. Tandem rolls permit cut down and finishing operations with one set-up.

Vertical Machines are available with 18" or 36" stroke. They are fast, economical and easy to operate. Patented hydraulic contour device permits finishing many different shapes such as hardware items, handles, cutlery, auto and appliance trim, escutcheon plates, etc. Central Vertical Machines may be set in batteries where a sequence of operations is desired. Conveyor systems and fixtures can be furnished.

Write for full information or send us samples of work to be finished.

CENTRAL MACHINE WORKS
74 Commercial St. Tel. PL 6-1500 Worcester 8, Mass.

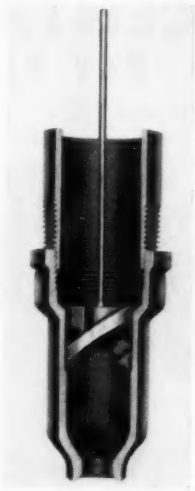
For more data circle **406** on Reader Service Card

preparatory procedure for blackening with Ebonol "C."
For more data circle **32** on Reader Service Card

★ ★ ★

Easily Cleaned Nozzle

When spray nozzles must be mounted at hard-to-get-at places, the cleaning job is often a tough one. To simplify this task, Spraying Systems Co. has introduced a Fulljet Nozzle with pull-out vane. The vane of this nozzle is made with a small female threaded connection to receive a pull-out rod, to be installed by the user in whatever length required. The rod extends back inside the pipe to some connection point that is easily accessible. When cleaning is needed, the vane is merely drawn back through the pipe and removed and cleaned while the nozzle itself is flushed out.



Spray Nozzle with pull-out vane

This Fulljet Nozzle is supplied in many sizes and capacities. Pull-Out-Vane Fulljet Nozzle Data Sheet 7071 is available from Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.
For more data circle **33** on Reader Service Card

★ ★ ★

Metal Cleaning Slusher

An improved motor-driven slusher for cleaning metal parts has been de-

Park No. 290 BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 6078 Military Ave., Detroit 4, Mich.

For more data circle **407** on Reader Service Card

VINYL PLASTISOL COATINGS

* APPROVED SOURCE

• MATERIAL HANDLING—TOUGH • DURABLE • NOT AFFECTED BY TRICHLOR.
• TUMBLING BARRELS—INEXPENSIVE • SEAMLESS • LONG LIFE LININGS
• PLATING EQP'T.—VERY DURABLE • EXCELLENT CORROSION RESISTANCE
• ELECTRICAL INSULATION—APPROX. DIELECTRIC VALUE 400V/MIL.

FOR FURTHER INFORMATION: **MARATHON METAL PRODUCTS, INC.**
67 HUNTINGTON ST. CORTLAND, N. Y.

For more data circle **408** on Reader Service Card

THE MASTERS' ELECTRO-PLATING ASSOCIATION
OF NEW YORK, INC.

59 East Fourth Street
New York 3, New York

proudly announces its

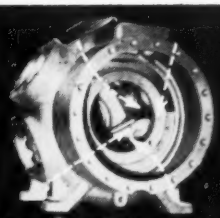
Thirty-Ninth Annual Banquet and Entertainment

SATURDAY, MAY 11, 1957

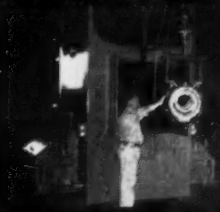
PLAZA HOTEL • NEW YORK CITY

Cocktails at 6:30 *Dress optional*

Subscription . . . $25.00 per person



Compressor Casting courtesy of The Trane Company, La Crosse, Wisconsin.



Model CAB 42" x 42" WR STM processes ten or more castings per hour — operated by one man. For information write Dept. CH.

INDUSTRIAL'S NEW SPIN-N-SPRAY WASHER

removes all traces of metal chips and dirt . . . Reaches hidden inner recesses of castings.

A new installation for The Trane Company required large compressor castings to be cleaned free from chips and dirt . . . rinsed, coated with rust preventive and dried. Industrial's staff developed this cabinet type washer with a special "spin and spray" design that achieves the task easily with the most effective cleaning results.

ISC

INDUSTRIAL SYSTEMS CO.

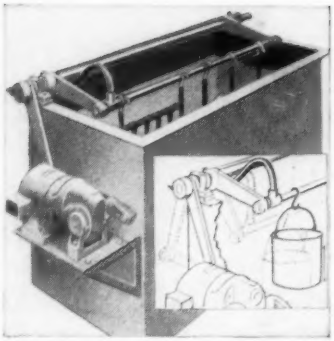
Exclusive Sales Agents For:
Industrial Washing Machine Corp.
Matawan, New Jersey

For more data circle **410** on Reader Service Card

veloped by Belke Manufacturing Co., 945 Cicero Ave., Chicago 51, Ill.

Material for cleaning is suspended in the cleaning or rinsing solution on a horizontal rod, which moves in an arc.

The parts move horizontally and



Belke Slusher: for cleaning metal parts

vertically through the solution, producing a slushing action that washes away the dirt. The parts may be suspended on plating racks, in baskets or on wires.

The improved slusher is available complete with tank or to fit present tanks. Drive motor is ¼ h.p., available for single or three phase.

For more data circle **34** on Reader Service Card

★ ★ ★

Spray Booth Water Treatment

A liquid treatment recently introduced by North American Mogul Products Co., for water wash spray booths helps to protect equipment and reclaim overspray.

Sethco Filters Fast

FROM
START
SELF PRIMING
instant filtration
TO
FINISH
Automatic Backwash Reversal Switch

LSIN-20V

Models equipped with corrosive resistant alloys and materials for every electroplating and industrial solution from pH 0 to pH 14. Removes particles down to one micron in size.

Setho Mfg. Co.
70-72 Willoughby St., Brooklyn 1, N. Y. • UL 5-8940

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PROTECTION Plus HOLDING POWER

Protective Coatings Since 1847

If you want to upgrade the finish of your metal products, find out about Vinsynite, the stable, wash-primer type pretreatment. Easily-applied to ANY metal by brush, spray or dip, its use requires no special equipment or controls. Promotes resistance to corrosion, increases adhesion of topcoats, improves appearance. Write for literature and technical data.

Specialty Coatings, Inc. division
THOMPSON and COMPANY
1010 Allegheny Ave., Oakmont, Pa.

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"Mogul M-55" keeps overspray paint particles separated, envelops them in a protective film to make them float, and does not "burn" or affect the paint in any way, the manufacturer states.

A special rust-inhibiting additive checks rust and scale formation in lines, headers, nozzles and strainers. "Cleanouts" are easier and less frequent and rust inhibition gives longer life to all equipment.

Literature is available from North American Mogul Products Co., Standard Building, Cleveland 14, Ohio.

For more data circle **35** on Reader Service Card

★ ★ ★

Aircraft Exhaust Track Stain Remover

Octagon Process, Inc., Staten Island 1, N. Y., has announced an Aircraft Exhaust Track Stain Remover called Octagon 470. This cleaner has been successful in removing stains from Cat-A-Lac finishes, and in removing oil, grease and general soil from painted and bare metal surfaces of aircraft, the manufacturer states.

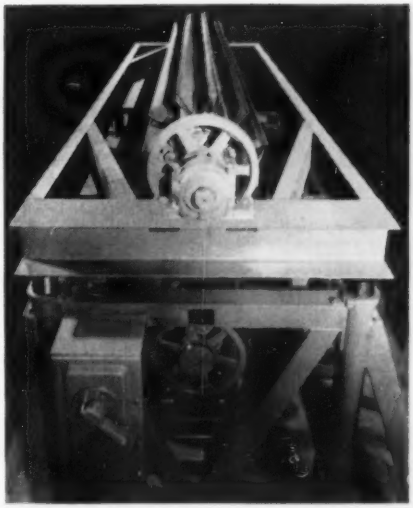
Octagon 470 is non-flammable, nontoxic and non-irritating, and has no offensive odor, the manufacturer states. It penetrates and disperses greasy dirt and hard-to-clean, baked-on deposits. Octagon 470 is used by spraying or wiping on the cold solution. A cold water rinse, or pressure spray if available, washes away the loosened particles leaving the surface free of dirt and stains.

For more data circle **36** on Reader Service Card

★ ★ ★

Wide Brush-Sanding Drums

Brush-sanding drums ranging from 37 to 74 inches wide have been introduced by Merit Products, Inc., Culver City, Calif. They are suitable for use in sanding or polishing wide metal sheets. These drums have a series of fibre brushes spaced around the circumference of the drum. They back up a series of abrasive strips that feed out from inside the drum and wipe the abrasive against the stock with a smooth resilient action. This action enables the abrasive to reach low areas, warps, or sinks without the necessity of grinding down high spots, producing a uniform scratch pattern across the entire width and length of the sheet. New abrasive is fed out of the drum as required.



Wide Brush-Sanding Drum: sands low spots

For more data circle **37** on Reader Service Card

News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . honors . . . societies.

NEW PLANTS

Kosmos Electro-Finishing Research, Inc., has moved from Belleville, N. J., to 140 Liberty St., Hackensack, N. J. The new facilities include a completely equipped laboratory, which will be used primarily for development of conversion coatings and plating solution additives.

The firm will stock a complete line of plating room supplies and equipment at the new location.

★ ★ ★

A new specialized structure has recently been completed in Los Angeles as West Coast headquarters for the **DeVilbiss Company,** manufacturers of spray finishing equipment with a Pacific Coast plant in Santa Clara and main plant in Toledo, Ohio. It is now in operation as sales and service center, rebuilt exchange and warehouse unit, and offers a customer research laboratory equipped with facilities for demonstration and testing of spray equipment of all kinds for DeVilbiss users and prospective customers. The new branch is five times the size of former quarters. It is located at East Slausen and South Garfield Avenues near the Santa Ana Freeway.

COMPANIES

Visitors at Booth 437 in the Pan-Pacific Auditorium during the 1957 **Western Metal Show,** March 25-29, will see a combination continuous drum- and belt-conveyor-type cleaning machine built by **Ransohoff, Inc.,** Hamilton, Ohio. Small parts are washed, rinsed and dried in the drum section and larger parts or tote pans are processed at the same time in the conveyor section. The drum- and con-

Artist's sketch of recently completed DeVilbiss West Coast headquarters in Los Angeles

veyor-type units are contained side-by-side in the same housing. The same pumps, tanks, blower and heating equipment serve both sides.

Design of the machine permits incorporation of pickling, neutralizing, phosphate coating and similar processes. Tanks and drying air of the machine on exhibit are heated by gas; they may be heated by steam, oil or electricity.

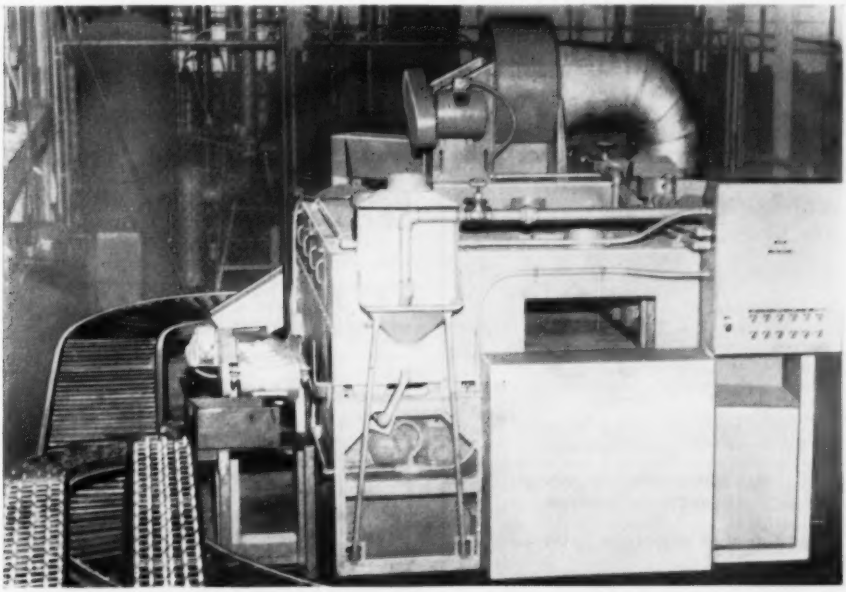
One-man operation is provided by return conveyors. Small work or parts processed in the drum section are automatically returned by a belt conveyor to the charging end; larger work or tote pans processed in the conveyor section are automatically discharged onto a gravity-type conveyor returning to the charging end of the machine. Completely automatic operation can be provided by integrated loading, unloading and transfer equipment.

Joseph M. Shelt, western representative field engineer from Sherman Oaks, California, and representatives from the Ransohoff general offices and factory in Hamilton, Ohio, will be on hand to explain the operation of this machine. Descriptive materials, installation photographs and drawings of the many types of Ransohoff equipment for the aircraft, missile, automotive, appliance and manufacturing industries will be available at the Western Metal Show.

★ ★ ★

A demonstration of "Rokide" ceramic spray coating of metal will be featured at the **Norton Company** booth (No. 918) in the **Western Metals Exposition,** Los Angeles, March 25-29.

A setup for applying Rokide ceramic coatings to a variety of base materials will be shown in a transparent enclosure to permit close inspection of the process. Rokide ceramic coatings have been used extensively for protecting jet engine and rocket parts from the high temperatures and corrosion



Ransohoff Combination Continuous Drum- and Belt-Conveyor-Type Cleaning Machine will be on display at Western Metal Show. Machine can process large or small parts.

of exhaust gases. Another use is in making close-fitting mechanical seals.

Other exhibits will demonstrate Norton's new "44 Alundum" abrasive grinding wheels on portable grinding operations. The recently improved "Tumblex 'A' Alundum" tumbling abrasive for barrel finishing will be demonstrated in a tumbling barrel turning out finished work.

Other Norton products for the metal industries will be shown, including the new "44 Alundum" abrasive wheels, recently introduced "Tumblex 'S' Alundum" abrasive spheres for barrel finishing of hard-to-reach surfaces, and other barrel finishing abrasives.

Another new product, to be shown for the first time, is Norton's ceramic nuclear fuel element. This source of atomic power is believed to be the first ceramic fuel element commercially available.

"Hot Rod" ceramic heating elements, first developed for Norton's own grinding wheel kilns, will be shown.

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

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The F. H. Ross Company of Charlotte, N. C., has been appointed distributor for **Pennsalt Chemicals'** Metal Processing products. John M. Davidson, sales manager of the Pennsalt Metal Processing Products Department, announced that the Ross Company will be the exclusive distributor of Pennsalt Metal Cleaners, Fosbond Coatings and Fos Cold-Forming Lubricants in the seven southeastern states of North and South Carolina, Tennessee, Georgia, Mississippi, Alabama and Florida.

The Ross Company's new Metal Finishing Department will be under the direction of James H. Ross.

★ ★ ★

The Dean Thermo-Panel Coil will be exhibited in Booth No. 1244 at the **Western Metal Exposition** in the Pan-Pacific Auditorium, Los Angeles, March 25-29, 1957.

Cross-section samples of the Dean Thermo-Panel Coil made of various types of materials, and in various fitting arrangements, will be shown.

★ ★ ★

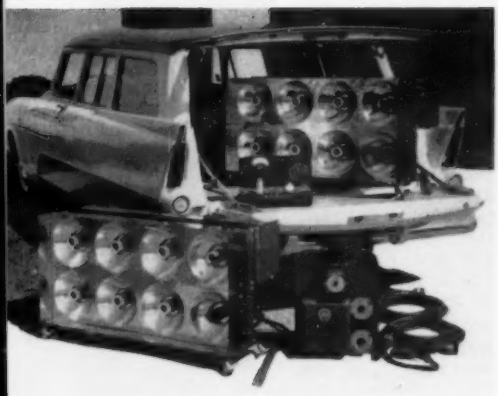
A complete field testing service utilizing DriQuik infrared industrial ovens in the plant of any company which has a heating, baking or dehydrating problem, has been announced by M. N. Kanouse, president of the **Dry Clime Lamp Corporation,** Greensburg, Indiana.

All Dry Clime representatives are now equipped with complete DriQuik infrared testing setups, making it possible for them to run complete tests in customers' plants.

MEMO FROM A PLEASED PLATER

Dear Jim: Believe it or not, Peterson the plant chemist, and I, are talking the same language—we're pals! Couldn't get it at first until I checked the grapevine and found the boss had written the JOSEPH B. KUSHNER ELECTROPLATING SCHOOL in Stroudsburg, Pa., and enrolled "Pesty" in ELECTROPLATING KNOW HOW too! The boss is sure a shrewd cooky—production's smoother than ice cream now! Your pal, Bill.

For more data circle **415** on Reader Service Card



Dry Clime representatives now offer complete DriQuik infrared field testing service.

Greater accuracy is achieved through this new testing method, since the tests are made "on the job" under actual working conditions of the customer.

The new service introduced by Dry Clime also makes it possible for all who are interested to view the tests and evaluate DriQuik equipment at the time it is being tested in the plant.

Dry Clime supplies complete ovens, and parts for customers who desire to build their own ovens.

★ ★ ★

Minnesota Mining and Manufacturing Company recently announced that it has made its "two billionth" commercial-size roll of tape.

That's over 68 million miles of tape —enough to reach the moon and back 118 times. If all that tape were wrapped around the Earth at the equator, it would circle the world 2,700 times in a giant-sized roll of tape 14 inches thick.

The company's production of tape passed the equivalent of the "two billionth roll" mark late in January, and the firm announced that the symbolic roll would be wound on a gold plated core, packed in a standard carton and sold through regular distribution channels.

The recipient of the commercial-size roll will be awarded 10 shares of 3M common stock and given an expense-paid summer visit to St. Paul, Minnesota, to exchange the two billionth roll for his award.

Hand application was the only method when tape was first introduced in 1925 to mask two-tone automobiles. Industry now uses taping machines that automatically apply tape to such different items as cans, chain, glass sheets and boxes at rates up to 300 applications per minute.

Paint masking is still one of the largest uses for pressure sensitive tape. Masking is not limited to paint, however. Polished metal sheets for stainless steel cabinets are protected against scratches during fabrication with protective tape, to mention only one of tape's many uses.

Tape enough to reach the moon 236 times is represented by the two billionth commercial-size roll of tape produced recently by Minnesota Mining and Manufacturing Co., St. Paul, Minn. Shown with the symbolic roll are (left to right) W. L. McKnight, 3M board chairman; H. P. Buetow, 3M president, and R. G. Drew, inventor of the first pressure sensitive tape. The two billionth roll will be packed in a standard shipping carton and sold. The recipient of this roll will be awarded 10 shares of 3M common stock.

The merger of **Bart-Messing** and **Sel-Rex Corporations**, both of Newark, N. J., has been announced by the boards of directors of both companies.

The older of the two companies, Bart-Messing, has been a manufacturer and distributor of power rectifiers, filters and metal finishing equipment and supplies for nearly fifteen years. The Sel-Rex Corporation has been prominent in the precious metals processes manufacturing field since its inception as Sel-Rex Precious Metals, Inc., five years ago. As the latter company grew, its product line expanded to include a wide range of non-precious metals items and electroplating processes. To avoid the impression that the company was active in this field exclusively, "precious metals" was dropped from the corporate name last year.

The company trademark, an elongated diamond with "Sel-Rex" superimposed in script, will be retained and all company products will continue to be marketed under this name.

The business will be conducted by separate divisions of the new Sel-Rex Corporation: Precious Metals Division, under the direction of E. C. Rinker, vice president, will manufacture and market precious metals salts, solutions and electroplating processes; Rectifier Division, headed by E. R. Redlhammer, vice president, will manufacture and market germanium, silicon and selenium rectifiers, liquid clarification filters, and an automatic, portable electroplating machine. Chemical Division, under the supervision of **Morris M. Messing**, president, will be concerned with metal finishing and electroplating equipment and supplies.

Other officers of the Sel-Rex Corporation are S. S. Wilson, vice president in charge of the company's Detroit and Chicago offices; Lucien R. Collart, secretary-treasurer; and Frank W. Brearley, assistant secretary.

Morris M. Messing

Executive offices and rectifier and filter manufacturing facilities are now at 155 Manchester Place, Newark, N. J. Plans are currently being formulated for the centralization of the entire manufacturing and precious metals laboratory facilities in a new building.

★ ★ ★

Distributors of "Honite" brand barrel finishing materials have added the lines of four major equipment manufacturers, according to **Minnesota Mining and Manufacturing Co.**, St. Paul, Minnesota.

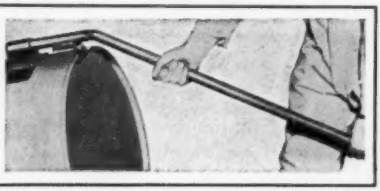
Twenty-two 3M distributors located in major metalworking centers across the country will handle, in addition to their "Honite" brand products, equipment made by: Speed-D-Burr Corporation, Glendale, Calif., makers of the Mitey-Mite line of barrel finishing equipment; Metal Finish Inc., Newark, N. J., makers of an established east coast equipment line now being marketed nationally for the first time; Rampe Manufacturing Co., Cleveland, makers of low-cost, precision-built, small capacity equipment; and Crown Rheostat and Supply Co., Chicago, first builders of modern barrel finishing equipment for the application of abrasive chips to the barrel finishing process.

MORSE DRUM UPENDER No. 32

Takes the strain and effort out of upending heavy drums. Has 40" handle offset 35° for top efficiency. Hefty 1¼" hook provides clearance for largest chime. 2½" x 8" toe plate spreads lifting pressure over large area to prevent drum damage. Order Several Today!

MORSE MFG. CO., INC. 762 West Manlius St., E. Syracuse, N.Y.

$6.50 FOB



For more data circle **416** on Reader Service Card

Pennsalt Chemicals' Metal Processing Department recently held a three-day sales seminar at Seaview Country Club in Absecon, N. J. Fifty members of the chemical company's sales, research and executive staffs attended the meeting, including field sales and production managers from all areas of the United States and from Canada.

The Pennsalt Metal Processing Department manufactures and sells metal cleaners, phosphate coatings, and cold working lubricants.

★ ★ ★

The Carborundum Company, for the first time in its 65-year history, achieved sales in excess of $100,000,000 in 1956, compared with $89,800,000 in 1955, $70,000,000 in 1952, and sales of $37,000,000 in 1946. Indicating plans for further growth, General Clinton F. Robinson, president of the firm in Niagara Falls, New York, announced the continuation of expansion and modernization with a scheduled expenditure of $33,000,000 during 1957 and 1958.

NEW POSITIONS

Roland Smith, formerly assistant to the aircraft sales division manager of The Fafnir Bearing Co., has been named sales manager of **The Abbott Ball Co.,** Hartford, Conn., producers of bearing balls and barrel finishing equipment.

Mr. Smith succeeds C. B. Schaeffer, who has resigned to form his own sales organization. He will represent Abbott Ball in New England.

★ ★ ★

Fenton Liffick has been appointed sales representative for **MacDermid Incorporated,** Waterbury, Conn.

Working closely with Edward F. Stack, the present MacDermid sales representative in the Midwest, Mr. Liffick will concentrate on sales of the company's line of metal cleaning, plating and finishing chemicals and compounds in Iowa, Wisconsin, Minnesota and northern Chicago.

A. Alexander

Fenton Liffick

Hanson-Van Winkle-Munning Co. has announced the appointment of **Alexander Alexander** to the post of finishing engineer in Chicago.

Mr. Alexander will assist H-VW-M salesmen in fifteen midwestern states in problems and service relating to the buffing and polishing of metals and plastics.

★ ★ ★

Robert R. Swanton and **Ted A. Sailor** have recently joined the Industrial Department of **Wyandotte Chemicals Corporation.** Mr. Swanton will headquarter in Wyandotte's Detroit office; Mr. Sailor in the company's Chicago office.

Robert R. Swanton

Ted A. Sailor

The **George A. Stutz Company** has announced the appointment of **Louis E. Carr** as sales and service engineer in the Wisconsin-Minnesota area.

Orrin P. Catlin

Louis E. Carr

Duane L. Clinton, president of **The Clinton Company,** Chicago, Ill., has announced the appointment of **Orrin P. Catlin,** Indianapolis, Ind., as the company's Indiana sales representative.

Mr. Catlin is well known to Indiana manufacturers, having had 21 years experience in industrial coatings.

★ ★ ★

A realignment in the company's midwestern sales area and appointment of two divisional sales managers have been announced by Henry M. Kidd, sales vice president of the **DeVilbiss Company.**

The company's Chicago branch will be headquarters for the north central division, under **Jack E. Kennedy** as divisional sales manager. He had been branch manager in Chicago.

Edward F. Luzius

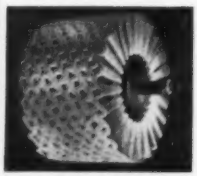
J. E. Kennedy

The St. Louis branch will be headquarters for the DeVilbiss Midwest sales area under the direction of **Edward F. Luzius** as divisional sales manager. He, like Mr. Kennedy, has advanced from the managership of his local branch.

★ ★ ★

Oakite Products, Inc., manufacturer of industrial cleaning and metal treating compounds, has announced two changes in its field service organization. **E. Lacy,** for many years a member of the company's Detroit staff, has been transferred to Houston, Texas. **John C. Ruttle** will serve the metal industries in western Detroit. Mr. Ruttle recently completed an intensive eight-week training program at Oakite's New York headquarters and in the field.

Cooler, Faster Buffing



with 45° Spoke Buffs
Patented spoke mounting principle maintains best cutting angle of 45° for faster, smoother cutting with less pressure and no streaks. Ventilation from 24 openings.

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McKeon's "Liquid Sulphur"

Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.
McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

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A. E. S. ANNUAL TRI-STATE REGIONAL MEETING, French Lick-Sheraton Hotel, French Lick, Ind., March 30. Luncheon—Technical Session—Banquet—Entertainment

Richard Glen Howser has joined **Wyandotte Chemicals Corp.**, Wyandotte, Mich., as an industrial representative in Denver, Colorado.

Bland B. Button

Richard Glen Howser

Bland B. Button has been appointed vice president of sales for **The Diversey Corporation**, Chicago, Ill., manufacturer of specialized chemicals for the food and metals processing industries.

Prior to his new appointment, Mr. Button was Diversey's general sales manager.

★ ★ ★

The **Coated Abrasives Division, Armour and Company**, Alliance, Ohio, has announced the appointment of **Jack M. Rogulic** as sales supervisor for the southern section of Cook County (Chicago), Illinois.

Prior to joining Armour and Company, Mr. Rogulic was associated with the Delta Die Casting Corp.

Managers of the four leading Wyandotte Chemicals Ford Division districts were honored during the recent 1957 Sales Conference at St. Clair Inn, St. Clair, Michigan. Shown left to right are: Fred Tholen, sales manager; C. J. Martin, Buffalo; C. B. Dover, Minneapolis; Tom Jones, Atlanta (first place); F. A. Troxell, Cleveland; and Ford Ballantyne, Jr., a Wyandotte Chemicals vice president and general manager of the J. B. Ford Div.

A. E. S. 44TH ANNUAL CONVENTION,
Sheraton Mount-Royal Hotel, Montreal, Canada, June 16-20.

MEETINGS

The Masters' Electro-Plating Association of New York has announced that it will hold its **39th Annual Banquet** at the Plaza Hotel, New York City, on Saturday, May 11, 1957.

This year **Mariano Ranno,** Imperial Plating Co. of Brooklyn, is the banquet chairman.

Sal Novelli of Service Plating Company is the chairman of the association, **Jesse Goldman** of Grand Chromium Plating Corp. is vice-chairman, and **Frank Kaiser** of Long Island Mechanical Plating Co. is treasurer.

S. C. Taormina is the executive secretary, with offices at 59 East Fourth St., New York 3, N. Y.

The cocktail hour will start at 6:30 P.M., followed by the Banquet, Dance, and Entertainment. Subscription to the Banquet is $25.00 per person. Dress is optional.

TRAINING COURSES

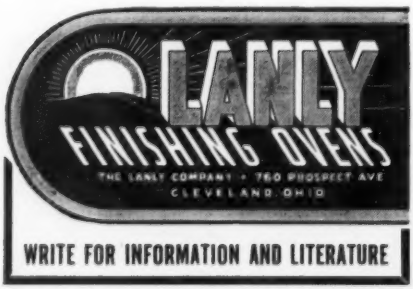
A Short Course in Paint and Varnish Technology will be offered by the School of Chemical and Metallurgical Engineering at Purdue University June 24-28.

Topics to be covered in the course will be: I—Processing Steps in the Manufacture of Finishes and Resins; II—New Technical Developments in Resins, Oils, Solvents, Pigments, Driers, Testing Methods, and Customer Specifications; and III—The Protective Coatings Industry. Lyle F. Albright, associate professor of chemical engineering at Purdue, has announced that one of the guest speakers at the course will be Dr. James S. Long, of the Speed Scientific School at the University of Louisville.

Further information is available from Professor Albright, Purdue University, Lafayette, Ind.

SOCIETIES

A committee to investigate organizing a society or association for those



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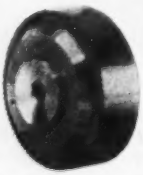
GARDNER SCRATCH THICKNESS GAGE



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Write for description.
GARDNER LABORATORY, INC.
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DEAN PRODUCTS, INC. 622 Franklin Ave
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concerned with vacuum metalizing met January 31, 1957, in Cleveland. The following people were present: **Malcolm S. Adler, F. J. Stokes Corp.; T. J. LaBounty, Logo, Inc.; Francis B. Dalton, Vac-Art, Inc.; Charles Matilo, Vacuum Metalizers, Inc.; Howard Farrow, NRC Equipment Corp.; Chester G. Northrup, Consolidated Electrodynamics Corp.; William A. Gibbons, Vacuum Metalizers, Inc.; James R. Sims, Delco Remy, Div., G. M.C.; C. W. Hamilton, Amos-Thompson Corp.; and Stanley Wasilewski, Buffalo Molded Plastics.**

The committee concluded that because of wide interest in all types of vacuum metalizing, such an organization has value. It was agreed that such an organization could aid in creation of standards on an industry-wide basis.

Consideration was given to the possibility of establishing a central laboratory as a clearing house for information.

The committee also suggested that such an organization aid in establishing business ethics for the metalizing industry. Another purpose of the organization would be to educate the public regarding vacuum metalizing, by means of magazine articles and news releases.

At the next meeting, the name of the organization will be decided upon; a committee on constitution and by-laws will be appointed; and a financial committee to study dues, initiation fees and expenditures will also be appointed.

Selection of officers will not take place until several meetings have taken place. Mr. LaBounty has been elected temporary chairman in the interim.

The next general meeting will be held at the Hotel Statler, Cleveland, Ohio, on April 3, 1957. All those interested in participating in an organization devoted to vacuum metalizing are invited to attend.

★ ★ ★

The **45th Annual Educational Session** of the **Chicago Branch, A. E. S.,** was held Jan. 26 in the Conrad Hilton Hotel. Malvern J. Hiler, president, The Commonwealth Engineering Co. of Ohio, spoke on "Gas Plating." Dr. J. H. Monaweck, associate chemical engineer, Argonne National Laboratories, discussed "Structural Materials in Reactor Design." Dr. L. D. McGraw, assistant chief of the Electrochemical Engineering Div., Battelle Memorial Institute, presented a paper on "Hydrogen Embrittlement."

R. Scott Modjeska served as moderator for the Educational Session. The meeting was concluded by the usual fine banquet, entertainment, and dance.

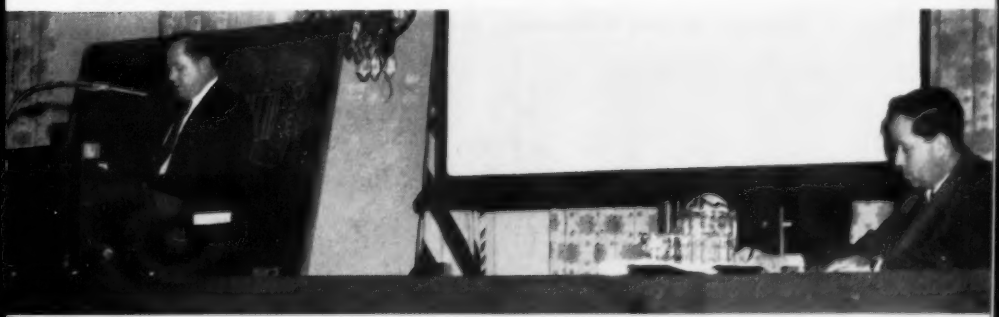

Fig. 1—Malvern J. Hiler, president, The Commonwealth Engineering Co. of Ohio, discusses "Gas Plating." R. Scott Modjeska, educational program chairman, is seated at right.

Fig. 2—Speakers and Chicago Branch executives. Left to right: Paul Glab, secretary of the Chicago Branch; Dr. L. D. McGraw; R. Scott Modjeska, moderator; J. M. Andrus, banquet and entertainment chairman; Malvern J. Hiler, Dr. J. H. Monaweck, speakers.

Fig. 3—The Metal Finishing Suppliers' Association, Inc., held a meeting of the Board of Directors coinciding with the Chicago Branch Annual Meeting. Shown, left to right, are: Louis J. Minbiole, Jr., Udylite Corp.; George A. Stutz, George A. Stutz Mfg. Co.; Wm. E. Belke, Belke Mfg. Co.; E. W. Couch, Lea Mfg. Co.; A. P. Munning, Munning & Munning, Inc.; M. M. Beckwith, Harshaw Chemical Co., 1st vice president of M.F.S.A.; Sherman M. Goble, Jr., Federated Metals Div., American Smelting & Refining Co.; H. D. McLeese, Metal & Thermit Corp.; G. H. Huenerfauth, Crown Rheostat & Supply Co.; V. Finston, The Meaker Co.; R. F. Ledford, Industrial Filter & Pump Mfg. Co. (PRODUCTS FINISHING photo.)

Meeting plans for Chicago Job Shop Association were discussed at January Board Meeting, which also included induction of new slate of officers and directors. Shown in photo, (standing, left to right) are: Herbert E. DeGrenier, Grand Plating Company, secretary-treasurer; Ray Crawford, Riverdale Plating Co., director; (seated, left to right) Chet J. Kennedy, American Buffing & Processing Company, vice-chairman; and Harold W. Baker, Electro-Galvanizing Company, chairman. Others elected to Board, but not shown in photo are as follows: John Halliday, Great Lakes Plating Company, Div. of Great Lakes Industries; Phil Ritzenthaler, Plating Engineering Company, West Allis, Wisconsin; and John Samaras, C. S. Samaras & Son.

NECROLOGY

Frank W. Judson, 83, retired vice president of **Pittsburgh Plate Glass Company**, died February 8 in Pittsburgh, Pa.

With 60 years company service when he retired in 1955, Mr. Judson, "dean" of the company's sales organization, was widely known throughout the automotive industry.

★ ★ ★

Rodwell Todd, secretary and director of Hanson-Van Winkle-Munning Company, died on February 1.

MEETINGS of INTEREST to FINISHERS

Mar. 9. Annual Educational Session and Dinner Dance, Dayton Branch, A.E.S., Biltmore Hotel, Dayton, Ohio.

Mar. 11-15. 13th Annual Conference and Exhibition, National Association of Corrosion Engineers, St. Louis, Mo.

Mar. 23. Annual Banquet and Educational Session, Los Angeles Branch, A.E.S., Ambassador Hotel, Los Angeles, Calif.

March 25-29. Tenth Western Metal Congress and Metal Exposition, Pan Pacific Auditorium, Los Angeles, Calif.

March 30. Fourth Annual Tri-State Regional Meeting, A.E.S., French Lick-Sheraton Hotel, French Lick, Ind.

Mar. 30. Annual Educational Session and Banquet, Rockford Branch, A.E.S., Faust Hotel, Rockford, Ill.

Apr. 2-4. Annual Meeting, American Hot Dip Galvanizers Association, Inc., Empress Hotel, Miami Beach, Fla.

Apr. 10-11. Annual Spring Technical Conference and Exhibition, International Association of Electrotypers and Stereotypers, Hotel Statler, Buffalo, N. Y.

Apr. 24-25. Annual Meeting, Lead Industries Association, Drake Hotel, Chicago, Ill.

Apr. 25-26. 39th Annual Meeting, American Zinc Institute, 36th Meeting, Galvanizers' Committee, Drake Hotel, Chicago, Ill.

Apr. 27. Milwaukee Branch Annual Meeting, Schroeder Hotel, Milwaukee.

Apr. 27. Symposium, "Important Engineering Considerations in the Plating Room," Milwaukee Branch, A.E.S., Hotel Schroeder, Milwaukee.

Apr. 27. Third Empire State Regional Meeting, A.E.S., Grand Ballroom, Onondaga Hotel, Syracuse, New York.

May 4. 21st Annual Banquet and Technical Session, Boston Branch, A.E.S., Hotel Statler, Boston, Mass.

May 11. 39th Annual Banquet, Masters' Electro-Plating Association of New York, Plaza Hotel, New York.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

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PRODUCT LITERATURE

44. Cold Stripper
Electro Cold Strippers quickly strip high-bake enamels, Japans, primers, hammers, epoxies. Information and testing sample available. Allied Finishing Specialties Co., 2641 W. Grand Ave., Chicago 12, Ill.

45. Chemical-Resistant Clothing
Clothing for use by people exposed to corrosive chemicals is discussed in a catalog being distributed by Resistall Work Clothes, Inc., Dept. P, 204 E. 23rd St., New York 10, N. Y. Specific resistances of Orlon and Dynel clothes are given to show the variety of reagents which these garments resist.

46. Recirculating Ovens
Information on recirculating ovens, which are said to deliver uniformly heated air for faster drying and baking. W. S. Rockwell Co., 2907 Eliot St., Fairfield, Conn.

47. Temperature Control
Data on the Thermoton, a modified steam trap that is designed to provide approximate temperature control of steam-heated equipment in addition to removing the condensation. Sarco Co., Inc., Empire State Bldg., New York 1, New York.

48. Buffs
Information on the advantages of Schaffner Bias Buffs. Schaffner Manufacturing Co., Inc., Schaffner Center, Emsworth, Pittsburgh 2, Pa.

49. Electrostatic Spray Equipment
Literature on the Scientific Electric system of electrostatic spraying. Scientific Electric, 105-119 Monroe St., Garfield, New Jersey.

50. High-Speed Silver
Operating procedures, technical information, physical properties of Sel-Rex silver plating process. Sel-Rex Corp., Precious Metals Div., 155 Manchester Pl., Dept. PF, Newark 4, N. J.

51. Filter Pump
Information on the Sethco double-cartridge, self-priming filter pump. Sethco Mfg. Co., 70-72 Willoughby St., Brooklyn 1, N. Y.

52. Planning to Paint a Pyramid?
Advantages and applications of Eponresin-based finishes are described in this booklet. Shell Chemical Corp., Chemical Sales Div., 380 Madison Ave., New York 17, N. Y.

53. Cabinet Ovens
Cabinet ovens bulletin describes features of Sly Cabinet Ovens for laboratory and production baking, drying and dehydrating. The W. W. Sly Manufacturing Co., 4784 Train Ave., Cleveland 1, Ohio.

54. Degreasing Data
Specifications and design features of a complete line of vapor degreasers designed for laboratory and production vapor degreasing. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

55. Barrel Finishing Media and Compounds
Folder gives detailed information on more than 25 barrel finishing compounds, tells how to choose the proper chip or media. Speed-D-Burr Corp., 3613-E San Fernando Rd., Glendale 4, Calif.

56. Rinse Control Equipment
Automatic control equipment designed to save unnecessary rinsing is described. Industrial Instruments, Inc., Cedar Grove, N. J.

57. Bright Brass Plating
Technical bulletin gives detailed information on True Brite Brass Solution, said to produce exceptionally uniform deposits of brass. True Brite Chemical Products Co., Box 31, Oakville, Conn.

58. Belt-Driven Plating Barrel
Illustrated catalog of Stutz belt-driven plating barrels. Geo. A. Stutz Mfg. Co., 4410 Carroll Ave., Chicago 24, Ill.

59. Stripping Copper
Brochure tells how to strip copper with McKeon's Liquid Sulphur. Sulphur Products Co., Inc., McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

60. Air Sanders
Descriptions, illustrations of various models in a complete line of air-operated sanding machines. Sundstrand Machine Tool Co., Pneumatic Div., Rockford, Ill.

61. Solvent Vapor Degreaser
Information on compact Model 22 vapor degreaser. Tect, Inc., Dumont, N. J.

62. Fused-Silica Immersion Heaters
Illustrated bulletin shows Vitreosil immersion heaters, which are suitable for use in electroplating and pickling solutions. Thermal American Fused Quartz Co., Inc., 18-20 Salem St., Dover, N. J.

63. Air-Dry Enamels
Literature describes line of air-drying enamels. Thompson & Co., Inc., 1010 Allegheny Ave., Oakmont, Pa.

64. Thickness Tester
Dermitron non-destructive thickness tester will check the thickness of metals on metals, non-conductors on metals, and metals on non-conductors without destroying the coating. Unit Process Assemblies, Inc., 61 E. Fourth St., New York 3, N. Y.

65. Tumbling Chips
Information on and samples of processed limestone and red granite chips for finishing ferrous and non-ferrous metals. Universal Tumbling Supply Co., 14337 Mansfield, Detroit 27, Mich.

66. Acrylic Coatings
Performance and application information on acrylic-based coatings. The Varnish Products Co., 5204 Harvard Ave., Cleveland, Ohio.

67. Rectifiers
Specifications, technical information on Walker selenium rectifiers for electroplating. Walker Div., Norma-Hoffmann Bearings Corp., Stamford, Conn.

68. Ten Advantages of Infrared
Bulletin describes and illustrates 10 advantages of using Chromalox Electric Radiant Heaters for baking and drying. Edwin L. Wiegand Co., 7522 Thomas Blvd., Pittsburgh 8, Pa.

69. Filter for Water-Wash Booths
Water-wash spray booths can be operated continuously by equipping them with filter that removes overspray from the wash water. Also collects deactivated paint for reclaiming. Industrial Filtration Co., 166 Industrial Ave., Lebanon, Indiana.

70. Finish Before Forming
Information on how to finish products before fabrication with the aid of Bonderite phosphate coatings. Parker Rust Proof Co., 2172 E. Milwaukee, Detroit 11, Mich.

71. Combination Vapor Degreaser
Rotomatic vapor degreaser combines liquid solvent dip and vapor degreasing in an automatically timed cycle. Catalog contains information on this and other models. Phillips Mfg. Co., 3457 W. Touhy Ave., Chicago 45, Ill.

72. Automatic Polishing Machines
Photographs show various setups for automatic polishing. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20 (Ferndale), Mich.

73. Chromate Conversion Coatings
Reference File on Iridite Chromate Conversion Coatings. Describes complete line of conversion coatings. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

74. Copper Anodes
Phosphorized copper anodes help to produce a more uniform copper plate. Details available from American Brass Co., Waterbury 20, Conn.

75. Vapor Degreaser
Information on the Aircon Model 75 vapor degreaser, a medium-sized degreaser designed to fill the gap between portable degreasers and large, high-production degreasers. Armstrong & White, Cheswick, Pa.

76. Paint Heaters
Bulletin tells how hot spray can improve paint finishes, contains illustrations of several models of paint heaters. Bede Products Corp., Jackson St., Dept. 1, Amherst, Ohio.

77. Cleaning Compounds
Bulletin discusses complete line of industrial cleaning compounds and solvents. Includes information on materials for steam cleaning; liquid aluminum cleaners; emulsion cleaners; and non-flammable paint removers. Brulin & Co., 2639 Columbia Ave., Indianapolis 7, Ind.

78. Tumbling Grain
Information on fused aluminum oxide tumbling grain. Carborundum Co., Niagara Falls, N. Y.

79. Automatic Polishing Machinery
Information on automatic polishing machines: tandem-roll horizontals, single-roll horizontals, and verticals. Central Machine Wks., 72 Commercial St., Worcester 8, Mass.

80. Expanding Contact Wheels
Literature tells how slotted rubber contact wheel improves polishing with abrasive bands and cones. Chicago Rubber Co., Inc., 651 S. Market St., Waukegan, Illinois.

81. Silver Anodes
Information on scientifically shaped silver anodes. American Platinum Works, 231 New Jersey Railroad Ave., Newark 5, N. J.

82. Automatic Plating Barrels
Details on automatic plating barrels, the advantages of the automatic barrel plating process. Frederic B. Stevens, Inc., 1816 Eighteenth St., Detroit 16, Mich.

83. Fused-Quartz Infrared Ovens
Folder explains advantages of using Clepco Fused-Quartz Radiant Ovens for baking and drying. The Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

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84. Automatic Spray Painting Machine
Brochure on an automatic reciprocating-type spray painting machine. Includes illustrations and complete description of this air-operated, electrically controlled machine designed for the spraying of areas up to 12 inches wide and 40 inches long. Conforming Matrix Corporation, 356 Factories Building, Toledo 2, Ohio.

85. Heat Exchanger
Bulletin No. 257 contains information on the Dean Thermo-Panel Coil, used for industrial heating and cooling processes. Two metal plates are welded together after one or both of the plates are embossed. The embossed spaces form flow channels for heating or cooling media. Dean Thermo-Panel Coil Div., Dean Products, Inc., 622 Franklin Ave., Brooklyn 38, N. Y.

86. Tack Cloth
Information on specially treated cloths that quickly pick up dust and particles prior to painting, thus help to produce a finer finish. Detro Sales Co., Inc., Culver City, Calif.

87. Pneumatic Sander
Information on the Easy Dual Action Sander. Detroit Surfacing Machine Co., 1266 East Eight Mile Rd., Detroit 20, Mich.

88. Chemicals You Live By
Interesting booklet gives story of chemicals manufactured by Diamond Alkali Co., their uses and something about how they are produced. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

89. Cleaning, Stripping Compound
Booklet entitled "Dow Sodium Orthosilicate" describes use of this chemical in dip, soak and electrolytic cleaning. The Dow Chemical Co., Dept. AL 607L-1, Midland, Mich.

90. "Hollow Air" Spray Gun
Literature tells how the "hollow air" spray pattern can improve paint finishing. Black Manufacturing Co., Livingston, N. J.

91. Metal Cleaning Machinery
Literature on metal cleaning and treating machinery. Cincinnati Cleaning and Finishing Mchry. Co., 2008 Hageman St., Cincinnati 41, Ohio.

92. Barrel Finishing Chips
Data sheet shows various sizes of aluminum oxide barrel finishing chips, discusses advantages of using this type of chip. Esbec Barrel Finishing Corp., 192 Beech St., Byram, Conn.

93. Tumbling Abrasives
Folder gives recommendations on the proper tumbling abrasives to use for various applications. The Exolon Co., 943 E. Niagara St., Tonawanda, N. Y.

94. Why Hot Spray?
Facts about the hot-spray process are contained in a booklet that includes case histories and questions and answers about this process. Spee-Flo Corp., Dept. PF-32, 720 Polk Ave., Houston, Texas.

95. Temporary Protective Coating
Literature contains complete information on Laqua, which displaces water from a surface and at the same time deposits a thin protective film that will not interfere with most subsequent finishing operations. Fidelity Chemical Products Corp., 472 Frelinghuysen Ave., Newark, N. J.

96. Scratch Thickness Gage
Description of an instrument for measuring the thickness of coatings. Gardner Laboratory, Inc., P. O. Box 5728 PF, Bethesda 14, Md.

97. Roller Coating Machine
Bulletin describes and illustrates Gasway 32B Basic Heavy Duty Rollacoat Machine. Gasway Corporation, 6463 N. Ravenswood Ave., Chicago 26, Ill.

98. Plating Solution Filters
Folder describes outstanding features of filters specifically designed for handling plating solutions. The Udylite Corp., Detroit 11, Mich.

99. Germanium Rectifiers
Bulletin GED 2934 describes an air-cooled germanium plating rectifier that features new cooling system design, remote control and automatic voltage stabilization in ratings from six to 24 volts and 750 to 12,000 amperes. General Electric Co., Section 463-15E, Schenectady 5, New York.

100. Buffing Machines
Information on buffing machines designed for various applications. Clair Manufacturing Co., Inc., Olean, N. Y.

101. Barrel Finishing Machinery
A 20-page catalog of barrel finishing machinery. Globe Div., Casalbi Co., 546 Wayne St., Jackson, Mich.

102. Spray Booth Coatings
Boothguard strippable fire-safe maintenance coating covers booth walls completely in one application. Guard Coatings Corp., 8-05 43rd Ave., Long Island City 1, N. Y.

103. Electroplating Processes
Bulletin EP-100 contains data on solution preparation, type of deposit produced, operating conditions, equipment required and applications for H-VW-M plating processes: alloy, cadmium, bright copper, lead, bright nickel, black nickel, bright silver, bright zinc, nickel, barrel silver and others. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

104. Spray Painting Equipment
Describes and pictures Eclipse hand and extension guns in action. Information on Eclipse low pressure spray painting equipment for applications where a spray booth is not practical. Eclipse Air Brush Co., 390 Park Ave., Newark, N. J.

105. "Teflon" Lined Pipe
Bulletin T-100 describes the application of "Teflon" as a liner for steel pipe. Pipe lined with "Teflon" will withstand severely corrosive conditions and temperatures as high as 350 deg. F. Halocarbon Division, Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Del.

106. Flat-Polishing Machine
Folder contains descriptions of three types of abrasive belt polishing machines for polishing flat surfaces. Hill Acme Co., 1209 W. 65th St., Cleveland 2, Ohio.

107. Bright Nickel
Outstanding features of Perglow bright nickel are detailed in literature which includes information on specific properties of this deposit, such as brightness, leveling, ductility, ease of operation, tolerance to impurities and ease of chromium plating over this nickel. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

108. Tubular Screen Filter
Brochure describes operation of automatic, self-cleaning Filter-Matic Tubular Screen Vacuum Filter. Units offer advantages in saving floor space, high flow capacity with filtration for low micro-inch finish requirements. Industrial Filtration Company, 166 Industrial Ave., Lebanon, Indiana.

109. Plastic Equipment
Specifications and performance data on a complete line of unplasticized rigid polyvinyl chloride blowers for expelling corrosive air, fumes and gases. Industrial Plastic Fabricators, Inc., Norwood, Mass.

110. Spin-N-Spray Washer
Washing machines with "spin and spray" design help remove stubborn dirt from parts. Industrial Systems Co., Matawan, N. J.

111. Rustproofing
Information on the Metabond rustproofing process. International Rustproof Corp., 1575 Merwin Ave., Cleveland 13, Ohio.

112. Used Finishing Equipment
Information on used buffing and polishing equipment. J. Holland & Sons, Inc., 485 Keap St., Brooklyn, N. Y.

113. Acid Dip
Detailed information on Metex M-629, a dry replacement salt for acid dipping all base metals. MacDermid, Inc., Waterbury 20, Conn.

114. Automatic Polishing and Buffing Machines
Catalog No. 50 describes and tells advantages of indexing rotary automatics, continuous rotaries, straight lines, abrasive belt types and small automatics. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

115. Don't Throw Away Nubbins
Information on a service: remelting and recasting buffing compound nubbins. McAleer Manufacturing Corp., 101 S. Waterman, Detroit 17, Mich.

116. Degreasers
Folder contains details on laboratory, two-dip, three-dip, vapor-spray, barrel-type, automatic, semi-automatic and special degreasers. Mechanical Process Co., Inc., 392 Valley St., South Orange, N. J.

117. Soft Abrasive Wheel
Uses of Grind-O-Flex Wheel range from smoothing and polishing to light grinding of flat and contoured surfaces. This versatile wheel is made up of hundreds of coated abrasive leaves. Data sheet describes fully. Merit Products, Inc., Culver City, Calif.

118. Chromium Plating Process
Bulletin SRHS-3, giving technical information on SRHS chromium plating solutions, tells how these solutions automatically maintain the proper concentration of important chemical constituents. Metal & Thermit Corp., Rahway, N. J.

119. One-Step Stripping
R & P Stripper No. 27 removes rust, paint, phosphate coatings and other soils. Folder tells how. Metasurf Corp., 12830 Eaton Ave., Detroit 27, Mich.

120. Plating Stop-off
Descriptive literature on Miccrostop, a material used for masking of machined parts in all plating operations, to produce hairline demarcation. Michigan Chrome and Chemical Co., 8615 Grinnell Ave., Detroit 13, Mich.

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121. Phosphatizing Large Areas
Bulletin 55-137 tells how to phosphatize large, bulky equipment such as cabinets, trucks, trailers, busses, and farm implements with Phosteem, a new process for cleaning and phosphatizing metal surfaces. Neilson Chemical Co., 6561 Benson St., Detroit 7, Mich.

122. Industrial Ovens
Bulletins show a complete line of industrial ovens of various types. Newcomb-Detroit, 5761 Russell St., Detroit 11, Mich.

123. Barrel Finishing Manual
A 55-page manual on barrel finishing, containing useful information on the process and equipment involved. Norton Co., Worcester 6, Mass.

124. Cold Degreasing Solvent
Data on Kearall 95, a cold degreasing solvent that can be used for drum cleaning of small parts, tank cleaning in quantity, and conveyorized degreasing. Ask for Data Sheet No. SS-195. Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y.

125. Harder Finishes
Information on the hardness and other advantages of isophthalic-based paint finishes. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.

126. Manual Spray Guns
Catalog 2 discusses construction features and advantages of latest-model Paasche manual spray guns. Includes list of air caps and accessories. Paasche Airbrush Co., 1909 W. Diversey Parkway, Chicago 14, Ill.

127. Copper Sulfate
Information on copper sulfate. Phelps-Dodge Refining Corp., 300 Park Ave., New York 22, N. Y.

128. Cleaning Handbook
Handbook describes methods to use in cleaning various articles for finishing. Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

129. Alloy Plating
Technical data on alloy plating processes. Promat Div., Poor & Co., 851 S. Market St., Dept., PF-2, Waukegan, Ill.

130. Paint Products
Information on lacquers, enamels, thinners, related products. Randolph Products Co., Carlstadt, N. J.

131. Automatic Cleaning Machine
Complete details on a washing machine that takes parts loaded in tote pans, washes and drys them, discharges them dry in same tote pan. Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

132. Barrel Finishing
Technical data folder describes chips and compounds, line of barrel finishing machines, processes for deburring, descaling, grinding, polishing and surface improvement. Roto Finish Co., 3704 Milham Rd., Kalamazoo, Mich.

133. Dip Finishing
Information on paints especially formulated for dip tank application. Sherwin-Williams Co., General Industrial Div., Cleveland 1, Ohio.

134. Copper Brightener
Information on Argol-X, a brightener for use in copper plating solutions. Smoothex, Inc., 10705 Briggs Rd., Cleveland 11, Ohio.

135. Brass Bright Dips
Data sheet describes equipment, procedures and materials for removal of oxides and stains from copper, brass, bronze, beryllium copper and other copper alloys. The Swift Industrial Chemical Co., Canton, Conn.

136. Plating Solution Filters
Description, specifications and photographs of horizontal plate filters for bright nickel, cyanide solutions, gray nickel-chrome, other solutions. Sparkler Mfg. Co., Mundelein, Ill.

137. Flow Coating
Information on finishing by the flow-coat process is contained in booklet that includes photographs of typical applications. George Koch Sons, Inc., Evansville 4, Ind.

138. Polishing Head
Murray Way's No. 55 Head features right- or left-hand operation, universal positioning, full work contact. Murray-Way Corp., P.O. Box 180, Maple Rd. East, Birmingham, Mich.

139. Protect Plated Parts
How to protect polished and plated parts by using Neotex, an open-pattern neoprene rubber mesh matting that can be used to line any surface where goods are worked on or are in transit. Research Products Corp., Dept. 76, Madison 10, Wisconsin.

140. Conveyors
Folder shows some of the many applications of Richards-Wilcox Zig-Zag Conveyors. Richards-Wilcox Mfg. Co., Aurora, Ill.

43. More Paint Per Coat
Bulletin F-286 gives facts on how hot spray process can aid in producing a heavier film in a single application of paint. The DeVilbiss Co., Toledo 1, Ohio.

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The Los Angeles Branch of the American Electroplaters' Society will hold its **27th Annual Technical Session and Dinner Dance** on Saturday, March 23, at the Ambassador Hotel in Los Angeles, Calif.

Papers to be presented are as follows: *Some Practical Plating Problems*, by Dr. Samuel Heiman, president of the A.E.S.; *Seeing Electroplating Solutions in Action*, by Dr. Walter Meyer, president of Enthone, Inc.; and *Electrodeposition on Titanium Alloys*, by Leo Missell, engineer, Lockheed Aircraft Corp.

Activities of the day include a noon-day luncheon and evening dinner-dance.

OPPORTUNITY SECTION

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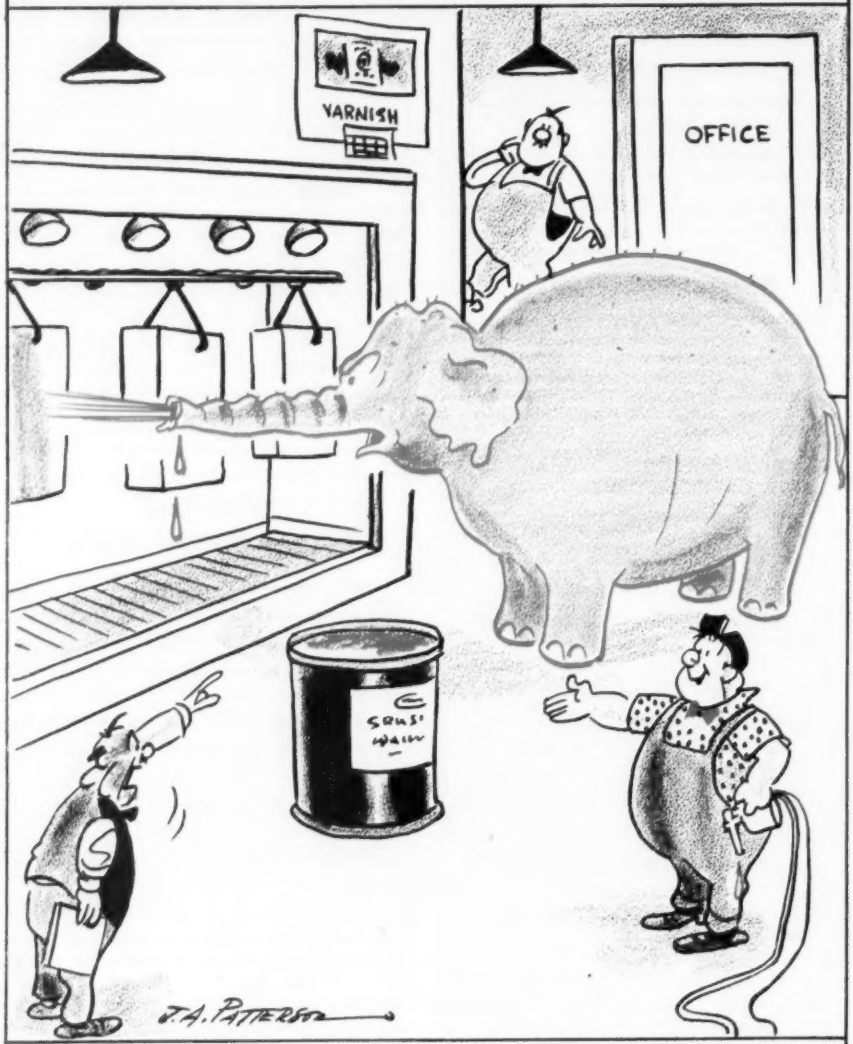

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